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Preventing Thefts by Employees

Fencing of Plants, Guarding of Exits,
Supervision of Locker Rooms and
Building Up Trustworthy Per-
sonnel Are Effective Means

THEFT by workmen in plants manufacturing brass, copper or other metal products of relatively high intrinsic value is largely kept in check by regulating the entrance and exit of the employees and by building up a feeling of responsibility in the worker. This conclusion is borne out by a survey of a number of such plants by *THE IRON AGE*. The survey was prompted by the experience of a manufacturer in Iowa which had been faced with the problem of theft in its brass departments. This company's factory buildings are not surrounded by a fence, and although employees are expected to leave by definite doors, there is always possibility for exception.

Fencing of Plants a General Practice

A large number of the companies canvassed in *THE IRON AGE* survey have found that fencing the plant, thereby securing control of the entrance and egress of employees, is the most effective means of preventing theft. In most cases workmen are required to have passes for taking packages out of the gates. Examination of such packages is usually left to the judgment of the watchman at the gate, and employees seldom resent such inspection if the company frankly explains the reason. A large canning company states that the gate examination is "to prevent pilferage from the locker rooms as well as from manufacturing areas. It is taken for granted that a package will be examined, and as the employee bearing a parcel approaches the watchman he opens it for inspection."

By prohibiting automobiles within the mill inclosure most companies have effectively checked the stealing of large pieces. One company reported the extreme case of a workman's throwing a pig or ingot outside of the company inclosure during the day and return-

ing in the evening to recover the material for subsequent sale to a scrap dealer.

The concealment of valuable articles in dinner buckets has always been a rather common form of petty thievery. Some companies prevent this by not permitting employees to take their dinner buckets into the work room. Under this plan workmen enter the shop through a locker or wash room, where they leave their dinner pails, and return to this room to eat their lunches. One plant which does not have such a system is seriously considering prohibiting workmen from eating their lunches in the work shop. A manufacturer of brass specialties in Los Angeles makes the observation that nearly all its employees bring their lunches to work in a paper sack or grocer's bag, which is, of course, destroyed as soon as the lunch is eaten. Of this company's 65 employees only one regularly carries a dinner pail.

Rigid Locker Room Practice

Preventing workmen from concealing valuable materials in their clothes is usually accomplished by careful supervision of the locker room. A large manufacturer of plumbing supplies and fittings in Philadelphia writes as follows: "Our locker rooms for the workmen all have open lockers without doors, and the rooms are in charge of reliable men who have supervision over the workmen. It would be difficult to carry anything into these rooms without being seen." Other plants require their workmen to change their clothing in a locker room that is constantly under supervision and have found this practice a very satisfactory one in preventing thievery.

A large brass works in Michigan, forced to take measures to prevent theft, established a separate

locker room into which all men coming to the plant leave their street clothes, put on their factory clothing and overalls and also leave their dinner buckets. "During all the working hours," the company states, "this room is closed and the men cannot reach their street clothes or dinner pails. At noon and at night a watchman is at the entrance to the locker room, and any package or article the men bring with them at either time must be initiated by the inspector whose duty it is to do that work. When a man wishes to take his factory clothing home the package is O.K.'d by the foreman of the department in which the man is employed."

"In the past," this company relates, "we have found that the taking of overalls and other clothing home to be washed was a common excuse for having a package, and, of course, most anything could be concealed in such a bundle and taken out of the plant. To overcome this we established our own washing machine in the plant and wash our men's clothing as required, so that the only time they have occasion to take out such a package is when clothing is to be discarded. It is pertinent to state that we have never had the least objection to our system, and the honest men appreciate the fact that there is no reflection upon them to have some method of checking up on those who are dishonest."

Checking Up on Materials In Process

Another effective method of preventing theft is the checking up of materials in process. A Cleveland brass manufacturing company "accounts for all the castings the molder makes, checking up on the good castings as well as the defective ones. The number of good castings is recorded in the foundry and delivered to the machine department where the account is verified. Any loss through machining or in the form of defective castings is recorded on the machine shop time cards. This count is then passed on to the next department, and any losses which may occur in this department are handled in the same manner, and so through all departments."

"Our storerooms," writes a manufacturer of specialized office equipment in New England, "are very carefully operated. All of our raw materials, parts in process and finished machines are carefully accounted for, and about the only things an employee could get away with might be a few small parts of the machines which would have no real value to him."

Nearly all companies send their finished parts to the warehouse as soon as possible, and this helps considerably to remove temptation where the manufactured products are of rather high intrinsic value. A manufacturer of non-ferrous metal products at Milwaukee locks up its valuable products and employs a trustworthy watchman who is responsible for them. "It is also our practice," the company states, "to ship out all completed castings before the closing of the shop in the evening. Our last pour is left in the sand until the men have gone home, after which the castings are taken out under the care of the watchman."

Many of the companies which employ a careful system for accounting for work in process believe that the psychological effect upon the workmen is such as to reduce the likelihood of thievery.

Selling Stolen Scrap Metal

Some companies have suffered considerable losses in the sale of scrap metal from their yards. A large hardware manufacturer in New England writes as follows regarding its solution of the problem: "The greatest difficulty we have had has been when metal has been sold to junk men in the yard and they have taken away new metal with the old, or the weights have been juggled. This has been remedied by putting the sale of old metal in the hands of our purchasing department, where the handling and packing of the metal is done by men who do not know to whom it has been sold."

A manufacturer of metal products in Milwaukee reports an unusual experience of this sort. "A few years ago," the company writes, "a neighboring foundry was buying scrap metal from a local scrap dealer. The company's scrap purchases included sprues and gates and other material that would never be sold by a foundry. Realizing this, the neighboring company made an investigation and found that these sprues and gates came from our plant. We immediately made an investigation and found that there was a small scrap dealer who had influenced some of the men in our cleaning room to fill their dinner pails with our scrap and receive a nominal amount for it, possibly 10c. or 15c. for material which was worth five or 10 times as much. This dealer sold this material through responsible metal dealers."

This same company also suffered losses when pigs or ingots were buried in wheelbarrow loads of waste and taken out of the plant, but has been able to stop these practices by carefully watching suspected employees and taking particular precautions in the hiring of new men.

A company in Delaware has been able to prevent the theft of scrap materials by keeping in close touch with the police department in the town where the plant is located. "As we are in a small town," the company states, "we do not believe local junk dealers would take a chance on accepting anything which they suspected of having been stolen from local plants. We recall several cases where attempts have been made to sell stolen scrap, but they have quickly been reported to the police department and the guilty party has been immediately apprehended."

Employing Detectives Unpopular

A State manufacturers' association in the Middle West states that hiring a private detective in the plant has often been a satisfactory method of preventing thievery. Individual companies, however, have not always found this means successful. "Some companies go so far," says a brass manufacturer in Michigan, "as to hire private detectives who are mechanics to spy on the various ones who may have aroused suspicion. This method is rather expensive and, when found out, creates an ill feeling among employees."

A Cleveland company had similar experiences with this plan. "We have employed inside men for the purpose of checking up on thefts," the company observes, "but the results have not been good and the practice has led to several mix-ups. We later instructed our foremen in the different departments to keep a sharp look-out for any irregularities of this sort and this materially helped to solve our problem."

Many companies have found that the prosecution of guilty parties has helped prevent further dishonesty among employees and, therefore, do not stop at the mere discharge of the men who have been caught stealing.

Building Up a Trustworthy Personnel

Small companies having a low labor turnover are not often troubled with plant thefts. A small maker of water heaters in California states that its policy of maintaining its labor force practically constant has virtually eliminated the problem of stealing by employees. A manufacturer of office equipment in New England with a small labor turnover reports that this fact has been largely responsible for its success in dealing with the theft problem.

This plan of placing trust in its workmen has been very liberally interpreted by a Pennsylvania manufacturer. "We had trouble some time ago with petty thefts," the company writes, "but have eliminated them by letting our men know that what is worth having is worth asking for. We make it a practice not to charge our employees for such things as a single faucet or stop cock, and only charge them actual cost on a bill of goods for use in their homes when the bill covers

two or more pieces. We also have a cooperative buying plan by which we purchase things which are needed in our workmen's homes and for which they cannot afford to pay cash. For such things we charge actual cost prices and allow the men to pay us by small weekly payments. We also frequently loan our employees limited amounts of money in case of emergencies, which we allow them to repay in small payments."

Careful selection and training of personnel has also solved the theft problems of a large manufacturer of barber shop equipment in St. Louis. "Before anyone is employed by us," the company states, "a careful investigation is made to ascertain his honesty and in-

tegrity. If he is employed he is trained to become a specialist in a particular line. In most cases the employee becomes a real asset to the firm and feels that it is to his best interest to keep things running smoothly. This also reduces the number of temporary workers."

A brass and metal casting manufacturer in Minnesota has the following to say on the subject: "The only way we have been taking precautions in this line is by having 'trusty' foremen and a few of the older employees keep their eyes open at all times. Quite frequently in this way we get information leading to the discovery of a dishonest worker."

Structural Steel and Concrete Bars

Steel Market Lost to Concrete Estimated at Over 2,000,000 Tons a Year

—Structural Shapes Not Keeping Pace with Ingots

MANY analyses have been made in an effort to determine the steel market which has been lost to reinforced concrete. Two independent calculations show results close enough to each other to indicate that a fair estimate has been made of the extent of that loss. Some of the data are given in the following paragraphs.

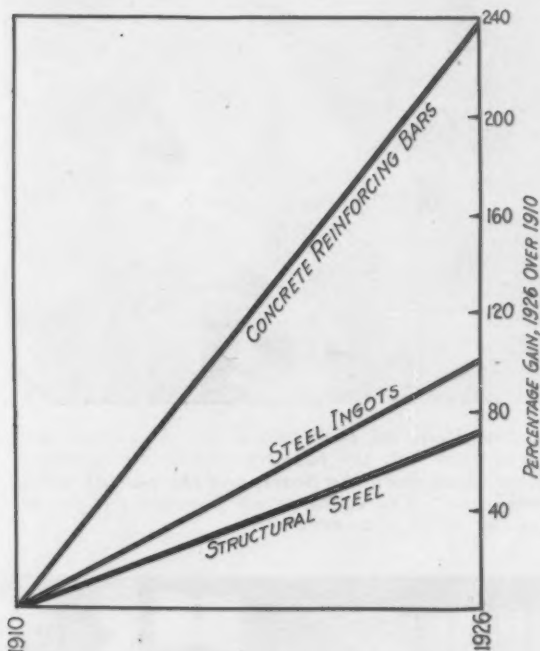
Production of concrete reinforcing bars in 1926 was reported by the American Iron and Steel Institute at 815,829 tons. It is estimated that 70 per cent of this, or 571,000 tons, was used in the structural part of buildings. When thus used it has been estimated that 1 ton of

large buildings are erected with structural steel frames. As the other half are built of concrete, the possible structural steel market lost in one year would thus be about as great as the amount which is used. This figure is within 3 per cent of that determined by the other method. It does not, however, take account of the concrete bars.

Graphic representation of the growth in the use of concrete bars in buildings and of structural steel in buildings appears in a diagram. For purposes of comparison, the growth of steel ingot production is shown also. In this diagram no effort has been made to show intervening years between 1910 and 1926. Such years would provide varying figures and give irregular curves, instead of the straight lines shown.

It will be noted that the use of concrete bars has been more than trebled in the interval, whereas the use of structural steel has increased only about 73 per cent. Steel ingot production meantime has more than doubled.

As a further light on this general subject of the replacement of steel by concrete, a tabulation made some time ago of the percentage distribution of the cement production of the United States may be of interest. The information available is unfortunately inadequate to make a highly accurate tabulation, but the figures are given for what they may be worth.



Percentage Growth of Concrete Reinforcing Bar Production Since 1910 Has Been More Than Three Times That of Structural Steel. The latter has not made so good a showing as have ingots

concrete bars displaces about 5 tons of structural steel. Consequently, the structural equivalent of the concrete bar tonnage which went into buildings would be 2,855,000 tons. If we deduct from this the tonnage of concrete bars used in the buildings, the possible steel market lost in one year to concrete is 2,284,000 tons.

Another method of approach is based on an estimate that 60 per cent of all the structural steel made goes into large buildings. Production of structural steel in 1926 was 3,911,663 tons, of which 60 per cent is 2,347,000 tons. It is reported that about half of our

| Uses | Per Cent |
|--|----------|
| Public and commercial buildings..... | 26.0 |
| Houses, exclusive of rural..... | 8.5 |
| Sidewalks and private driveways, exclusive of rural | 5.5 |
| Small town and farm uses..... | 18.0 |
| Sewerage, drainage, irrigation, culverts and concrete pipe | 4.5 |
| Paving and highways..... | 27.5 |
| Railroads | 5.5 |
| Bridges, river and harbor works, dams and water-power projects, storage tanks and reservoirs | 3.0 |
| Miscellaneous uses | 1.5 |
| Total | 100.0 |

On this basis the 26 per cent use of cement in public and commercial buildings would represent over 40,000,000 bbl. in a year. More than half of this amount is believed to go into footings and other "mass" work, without reinforcing bars.

H. C. and W. C. Fownes have given 10,000 shares of the preferred stock of Spang, Chalfant & Co. received by them in exchange for their holdings of the Standard Seamless Tube Co. to 50 men long identified with the Standard company as department heads and plant officials. H. C. Fownes was president, and W. C. Fownes was vice-president, of the Standard company, and they held almost all of the stock. The par value of the preferred stock is \$100 per share.

Aluminum Foundry Rearranged

Double Output with 40 Per Cent Less Molding Floor
Space—Routing and Handling of Materials
Well Planned

INCREASED production at the plant of the Packard Motor Car Co., Detroit, made it necessary to reduce the floor space of the aluminum foundry about 40 per cent to make room for a decided expansion of the core room and at the same time virtually to double the output of castings. After careful study it was decided that the installation of an extensive series of power-driven conveyors was not required. Instead, the desired expansion in production was achieved by the selection of other materials-handling units.

The drags of large crankcases are made in two

Osborn roll-over machines, shown in the middle foreground of Fig. 1. These machines are served by overhead cranes which were moved from another department. The gravity conveyor shown in the left background is used to bring drags, with the crankcase castings in them, back to the molding department. The cranes pick them up from the conveyor and shake them out in the sand pile shown in front of the machines. The sand is wet down, cut over, and enough of it is put through a riddle to serve as facing. The castings themselves land in the foreground, where the core butts,

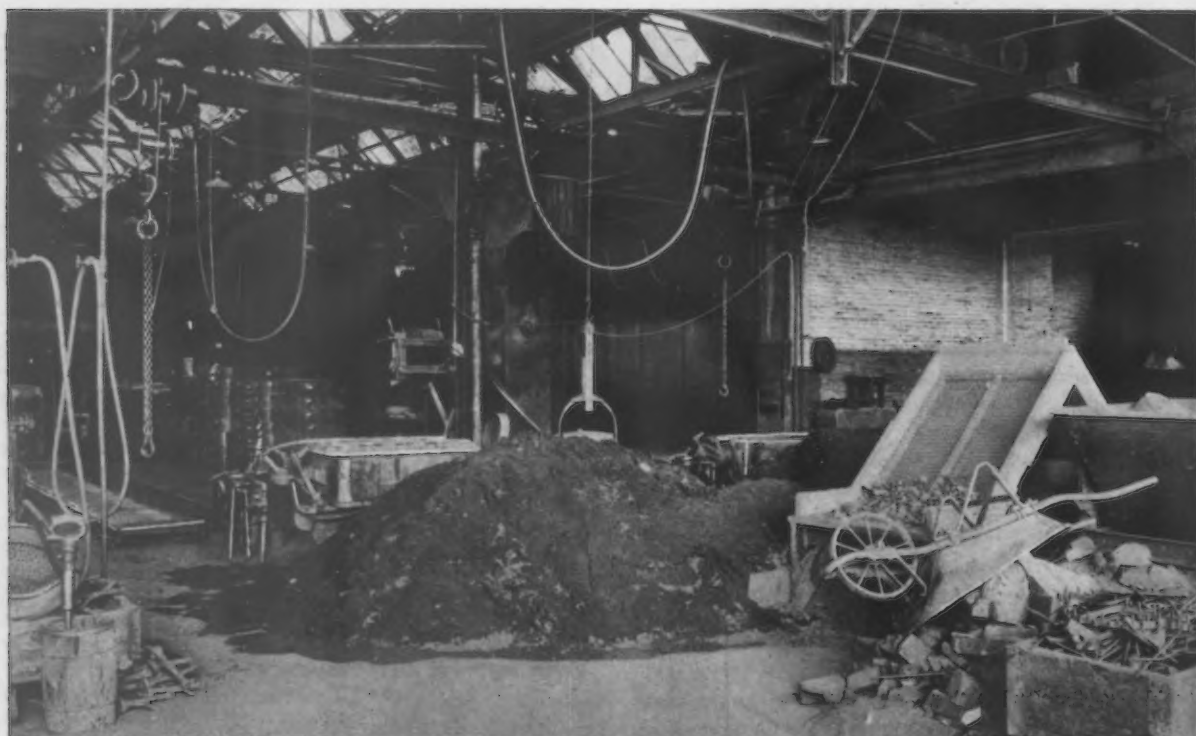


Fig. 1—In the Crankcase Molding Department the Drags Are Made on the Osborn Jar Roll-Over Machines Shown Behind the Sand Pile. The drags are delivered back into the foundry proper by carriages which run out from under the machines. Cranes then deliver them down the floors, and the poured molds come back on gravity carriers to be shaken out on the sand pile. The castings are knocked out in the foreground, and the rods, chills and chunk cores are recovered

Fig. 2—The Finished Crankcase Drags Are Brought by a Crane to the End of the Gravity Carriers Shown. Here dry sand and green sand cores are assembled, the copes are closed on, and the molds are poured and run back for shaking out



rods, etc., are knocked out and put over the inclined riddle shown. The castings then pass to the cleaning room and the various materials knocked out go to the salvage or dump, as the case may be.

The flasks are returned by the crane to the molding machines. After a drag is completed, a car to which it is lowered transports it to a point where it is picked

up by another crane and taken to the back end of another molding floor and placed in the position occupied by the empty flasks shown in Fig. 2. From this point the drags are pushed toward other molding machines.

Located between the two sets of gravity carriers is the green sand core department, as shown in detail in Fig. 3 and in the background of Fig. 2. Green sand

Fig. 3—Green Sand Core Department for Crankcases. The cores in the center of crankcases are made of green sand, being supported by special chairs and arbors, as shown on the bench in the right foreground

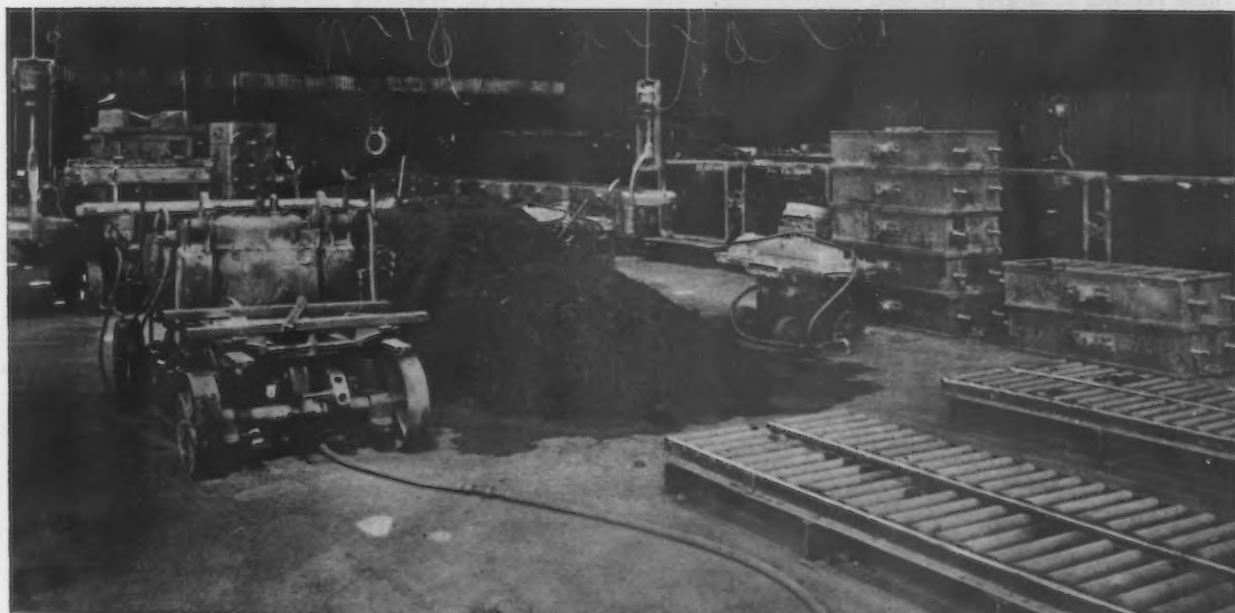


Fig. 4—In the Oil Pan and Floor Plate Molding Floor the Molds Are Lifted on and off Molding Machines by Light Overhead Cranes and Are Handled on the Floor by Gravity Carriers

Fig. 5—In the Light Work and Snap Molding Department, Molds Are Made on Molding Machines or Benches, and Then Are Run Down Gravity Carriers, Poured off, and Run Back for Shakeout



cores can be seen standing on the table in the right foreground of Fig. 3, and the green sand core boxes are shown on the various benches. As the drag progresses from where it is first set on the carrier, dry sand and green sand cores are placed in position, and then opposite the sand heap shown beyond the core-makers' benches a flat back cope is rammed up and closed on. The mold is then poured and, after the cope is shaken out in the sand heap shown at the end of the core room, progresses still further toward the final shakeout shown in Fig. 1.

For molding oil pans, foot plates and other fairly bulky castings a group of four machines is placed in the center of the foundry, with gravity carriers extending from it, as indicated in Fig. 4. In this case the mold parts are handled with overhead cranes, while the work is transported on gravity carriers and is subsequently returned to a point near the molding machines for shakeout.

For making small work, raised gravity carriers are used in connection with benches or light molding machines. A portion of this department is shown in Fig. 5.

The melting department of the foundry consists of a battery of oil-fired furnaces arranged along the wall at one end but in such a position that the metal is relatively close to the pouring point for most of the work.

The principal gain from the rearrangement of the foundry was that by judicious selection of equipment and careful planning of the work increased output and a considerable saving in the number of man-hours entering into the product were obtained without a heavy capital investment.

The H. M. Lane Co., Detroit, acted as consulting foundry engineer in connection with the undertaking, and the work of the installation itself was done by the construction division of the Packard Motor Car Co.

Magnet Handles Strip Steel Successfully

Two Coils Lifted in Novel Manner with Flat Plate Without Uncoiling—
Boxed Strip Picked Up Readily

COILED strip steel is a difficult material to handle, for unless the coils are tightly bound together they will pull apart and cause confusion to the handlers and damage to the steel. A strip steel coil, even though securely bound, is a heavy, awkward thing to handle and the moving of any amount of this steel requires a gang of husky men who must be continually cautioned against battering the finished steel strip.

The Superior Steel Corporation, Carnegie, Pa., whose product is largely cold and hot-rolled strip that is shipped both in coils and boxed flat, has adopted lifting magnets for handling finished steel. Manual labor is used only where necessary to move the bundles or boxes into closed freight cars. At this plant they recently loaded 200,000 lb. of strip steel into box cars with the magnet and four men during a 10-hr. shift. Before the magnet was purchased, the most that six men could load was 140,000 lb. in a 10-hr. shift.

The magnets usually handle two coils at a time. If these two coils are not placed tightly up against each other, one or both of the coils have a tendency to fall away from the magnet and be held in a vertical position. Because the steel must not be battered, it is not satisfactory for the coils to be dropped on their edge.

In experimenting with the magnets on this job of handling coiled strip steel, the Superior company discovered that a thin sheet of steel placed over the two coils to be lifted would spread the flux from the magnet

sufficiently to hold both coils flat against the plate. It is a peculiar fact that this plate does not short circuit the flux, but causes the magnet to do a better job than without the plate.

The fact that much of the strip steel is boxed flat does not interfere with its being handled by the lifting magnet. One photograph shows an Electric Controller & Mfg. Co. lifting magnet moving a long box of strip steel. This particular package weighed a little over 600 lb., while the same magnet is handling packages that run as high as 1000 lb.

A double-magnet lifting rig, used at the same plant for coils of wide strip steel, was illustrated in *THE IRON AGE* of Feb. 16, page 472.



Avoiding the Loosening of Coils and Damage to Material Resulting from Ordinary Handling of Strip Steel by Magnets (Upper Right) by the Use of a Flat Plate (Lower Right)



Systematic View of Stainless Steels

High-Chromium Steels Classified into Three Groups—Properties Briefly Described and Utility for Various Purposes Noted

BY FRANK R. PALMER*

DOZENS of brands of corrosion-resisting alloys or "stainless steels" are now being manufactured by many different mills, under a variety of trade names. It is only natural that data regarding them may be contradictory, incomplete and even inaccurate.

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After some 10 years' experience with them, it is possible to classify them into three general groups. These three groups may be designated as A, B, and C, and the rules which govern this sub-division are so fundamental and important that they may be called the "A B C of Stainless Steel."

Each group is characterized by certain properties

| | Group A | Group B | Group C |
|--|---|---|---|
| Analysis | Chromium less than about 14 per cent. Carbon less than about 0.40 per cent. May contain small percentages of tungsten, copper, nickel, silicon or molybdenum. This group is magnetic. | Chromium more than about 16 per cent. Carbon less than about 0.40 per cent. May contain small percentages of copper, nickel, silicon, molybdenum or tungsten. The group is magnetic. | Contain enough chromium and nickel to make steel austenitic and non-magnetic. Usually contain twice as much chromium as nickel or vice versa. |
| Heat Treatment | Respond to hardening, tempering and drawing. Resulting physical properties depend on analysis. | Heat treatment not recommended. Are naturally soft—usually having a Brinell under 200 and seldom over 250. | Do not respond to heat treatment. |
| Toughness | Are structurally dependable. Are not brittle in sharp-notched sections or under impact. | Have low impact resistance especially in notched sections. Not dependable for bolts and similar notched parts when used under impact. | Extremely tough at all times. Thoroughly dependable for any type of shock service within the capacity of their strength. |
| Grain Growth | Not subject to excessive grain growth at incandescent temperatures. Thoroughly dependable at any temperature for supporting any load or shock within their carrying capacity. | This group is divided with regard to grain growth. The simple chromium irons and those containing high silicon or aluminum are subject to excessive and dangerous grain growth and become very brittle. Grain growth is reduced by use of carbon, manganese, copper and nickel. Some steels containing these elements are not subject to grain growth at all. | Do not become brittle because of grain growth—thoroughly dependable for high temperature service. |
| Hot Working Qualities | Readily forged, pierced or rolled. Air-harden on cooling. | May be forged, rolled or pierced. Those steels subject to grain growth must be heated very quickly. Those not subject to grain growth are heated in the usual way. | May be forged, rolled or pierced. Become work-hardened progressively below 1800 deg. Fahr. Do not air-harden. |
| Cold Working Qualities | Can be cold drawn into wire, cold rolled, bent, formed, upset, coined and deep drawn. | Can be cold drawn into wire, cold rolled, bent, formed, upset, coined and deep drawn. Not quite so easily worked as Group A with equal carbon content. | Can be cold drawn into wire, cold rolled, bent, formed, upset, coined and deep drawn. Work-harden twice as rapidly as Group A. |
| Machinability | Machine readily with properly designed tools. | Machine readily with properly designed tools. | Very difficult to machine. This is an outstanding objection to this group. |
| Riveting | Make excellent cold rivets. Not recommended for hot rivets driven above 1500 deg. Fahr. on account of air-hardening. | Due to low impact values, not desirable for either hot or cold rivets. | Excellent for either hot or cold rivets. Hot rivets may be driven at a high temperature. |
| Welding | Can be welded by oxy-acetylene flame, electric arc or resistance. Weld air-hardens. No grain growth. | Can be welded by oxy-acetylene flame, electric arc or resistance. Those metals subject to grain growth become very brittle adjacent to the weld. Those metals not subject to grain growth yield satisfactory welds. | Can be welded by oxy-acetylene flame, electric arc or resistance. Weld does not air-harden and is very tough. This is an excellent group for welded products. |
| Corrosion Resistance | Very satisfactory for resisting weather, water and many organic and inorganic corrodents. | Possesses corrosion-resisting properties superior to Group A. | Corrosion resistance depends largely upon chromium content. This group will resist some types of action that Groups A and B will not. With chromium over 16 per cent the resistance is excellent. |
| Scale Resistance | Useful for temperatures up to about 1500 deg. Fahr. | Superior to Group A—recommended for temperatures about 1500 deg. Fahr. | The high-chromium steels are as good or better than steels of equal chromium in Group B. |
| Strength at Elevated Temperatures | Much better than straight carbon steel for temperatures up to 1000 or 1200 deg. Fahr. | Steels subject to grain growth not safe at high temperatures. Steels not subject to grain growth are better than Group A above 800 deg. Fahr. | Better than Group B at temperatures over 1000 deg. Fahr. |

which are common to all steels falling therein. The exact properties of the individuals will vary considerably depending upon the percentage of carbon and chromium, and to a lesser extent upon special additions of other alloying elements, such as nickel. It does not therefore follow that all steels within a given group are interchangeable in their application, and we must still take cognizance of brand names and detailed analyses. On the other hand, it should be emphasized that all corrosion-resisting steels at present commercially produced fall into one of these three groups and therefore exhibit the general peculiarities of that group.

A most common error is the disposition of many to say "pigs is pigs" and accept or condemn all stainless steels on the performance of one grade or the performance of one group. As a matter of fact, the three groups of stainless steel have very little in common one with another—one might only say "they are all steels containing chromium and all of them have certain corrosion or heat-resisting properties." The three groups should no more become confused than should three totally different alloys like nickel silver, bronze and monel metal. Although these all contain copper and all possess corrosion-resisting properties, we are not tempted to classify them under one head for construction purposes. We should be just as careful not to comprehend all grades of stainless steel in any general statement.

For the sake of brevity the general properties of each group of stainless steels are presented in tabular form. It is not possible to deal fully with all details and exceptions, and furthermore no effort has been made to extend the table beyond the mere delineation of group characteristics. There is a considerable

†EDITOR'S NOTE: The reason for these variations has been given by E. C. Bain. See THE IRON AGE, Feb. 23, 1928, page 535.

choice of brands available in each group and they will not all serve equally well for a given purpose. The detailed properties of any given steel should be secured from the manufacturer of the brand in question, or from experiment under the required conditions of service.

It should be noted under "Analysis" that Group A has for its top limit about 14 per cent chromium, while Group B has for its lower limit about 16 per cent chromium. Steels containing from 14 to 16 per cent chromium partake of the properties of both groups. It must be understood that these group limits are not rigidly set, but fluctuate with the other elements contained in the steel. For example, stainless iron with about 0.10 per cent carbon may contain up to about 14 per cent chromium and still remain in Group A. When the carbon is raised to 0.30 per cent the chromium can be increased to 15 or even 16 per cent and the steel will still exhibit the properties of Group A.† The introduction of high manganese or nickel will also tend to raise the chromium limits of Group A and the introduction of silicon or aluminum will tend to lower them. With these reservations, the table applies to all high-chromium corrosion-resisting steels regardless of brand names or identity of manufacturer.

While it should scarcely be necessary to emphasize the term "quality" in connection with highly specialized products such as stainless steel, a word on this subject is in order. There is no grade of steel which reflects more honestly the skill of the workmen and the diligence of the inspection than stainless steel. Quality in this class of product is evident not only in narrowness of chemical limits and the purity and cleanliness of the product, but is very conspicuous in the uniformity of different shipments carrying the same brand label. It should be emphasized, however, that no amount of "quality" injected into a stainless steel will lift it from one group into another.

Iron-Silicon Equilibrium Diagram

A DISCUSSION of several published investigations on iron-silicon alloys, including an early one of his own together with careful studies of high silicon alloys, has enabled T. Murakami to prepare a complete equilibrium diagram. (Science Reports, Tohoku Imperial University, Japan, May, 1927). His original suggestion that the compound Fe_3Si_2 existed was doubted by Phragmen, but the latter has been able to find X-ray evidence of its occurrence subsequently in well-annealed specimens. Other students postulated a gamma to alpha change in alloys containing free iron, and occurring at 800 deg. to 400 deg. C., depending upon the silicon content. Murakami made careful X-ray and microscopic studies on this point, and finds only the body-centered cubic lattice characteristic of alpha or delta iron. A magnetic change does occur unaccompanied by any atomic rearrangement.

Studies on higher silicon alloys, where agreement by various investigators is far from complete, were made on special melts of Armco ingot iron plus measured amounts of carbon-free ferrosilicon. These were studied by thermal analysis, X-rays, and the microscope. All results are summarized in the diagram, the meaning of the various fields being as follows:

Area A B M P, alpha iron with silicon in solid solution

Line A₂ N O, magnetic change in iron.

Line P Q, magnetic change in Fe_3Si_2 .

Line B J, solidification of iron-FeSi entectic.

Line B M, entectic mixture of iron and FeSi.

Area B J M K, iron-FeSi entectic plus excess FeSi.

Line M L K, formation of Fe_3Si_2 by reaction of iron and FeSi.

Area P M L O, saturated alpha solid solution plus Fe_3Si_2 .

Line L O, solid compound, Fe_3Si_2 .

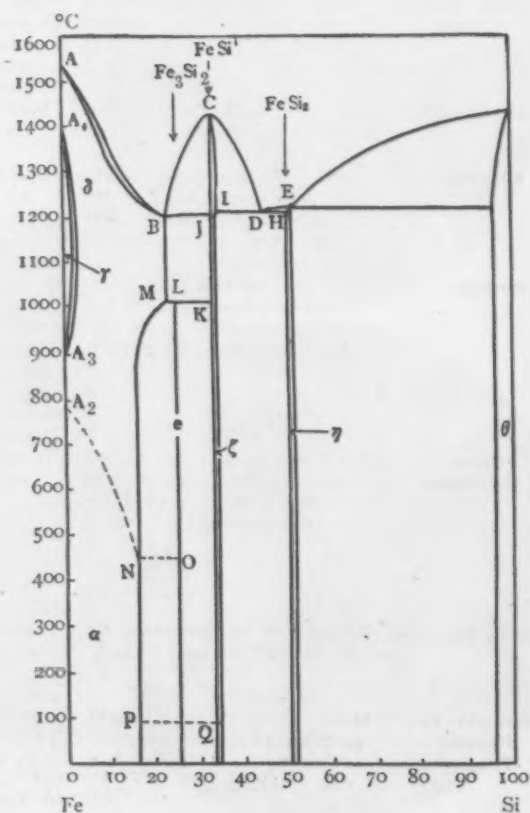
Area O L K Q, mixture of Fe_3Si_2 and FeSi.

Narrow strips at about 33 per cent silicon and 50 per cent silicon represent the ability of the compounds FeSi and FeSi_2 respectively to dissolve a small amount of silicon.

Between 96 and 100 per cent silicon, iron is held in solid solution.

The vertical band between I and H is a mixture of FeSi and FeSi_2 (each with a little silicon in solution).

The broad area between 50 and 96 per cent silicon is a mixture of FeSi_2 (with a little silicon in solution) and silicon saturated with iron.



One-Ton Acid Open-Hearth Furnace

Some Experimental Results Obtained in a Small Furnace Operating Under Regular Conditions—Unusually High Temperatures Available

BY C. E. MEISSNER*

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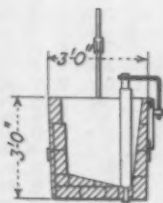
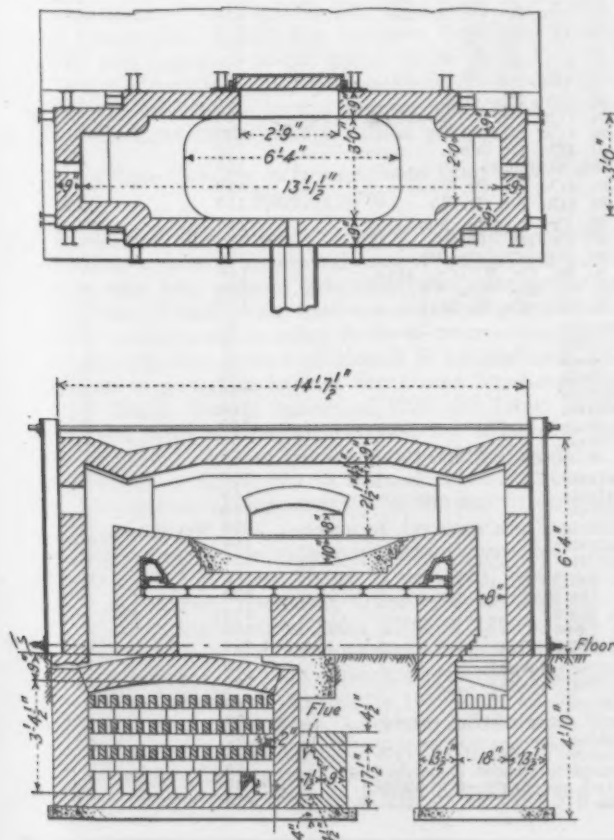
*Development engineer Chrome Steel Works, Carteret, N. J.

a sand paddle. It needs little repairing and lasts about five heats. Charging is done by hand. The charge generally consists of about 1800 lb. of scrap and 200 lb. of pig. Alloy additions bring up the charge to about 2000 lb. of metal. The furnace loss is 6 to 10 per cent. Alloy losses are not greater than in a standard furnace. All alloys are added in the furnace except ferromanganese, which is sometimes added in the ladle.

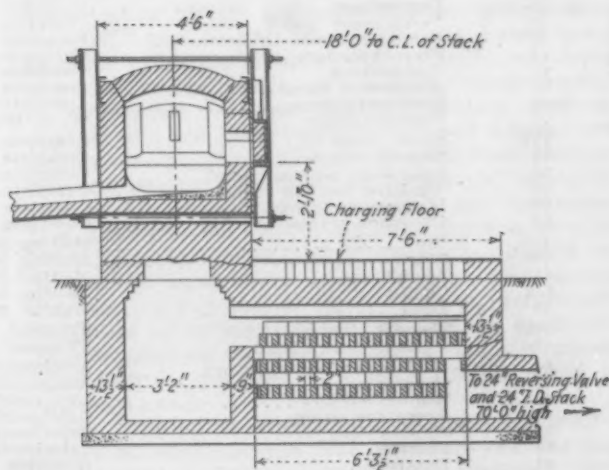
Melts can be made as high in carbon as desired. As our average analyses are high-carbon (0.65 to 0.90 per cent) alloy steels, a ratio of 10 to 20 per cent pig to scrap is mostly used. Practice is to melt about 15 points higher in carbon than the final carbon desired and then work down before additions of alloys. Ease of holding both heat and carbon is normal. Carbons as low as 0.04 per cent have been attained and 0.06 carbon is quite easily reached. Slags have been worked very successfully with iron reduced as low as 18 per cent FeO.

The furnace is oil-fired, using light, low-sulphur oil of 22 deg. Beaumé. The oil consumption is about 80 gal. per ton, which is double that normally used on the larger furnaces. This greater consumption is due to greater relative heat losses in this small unit. The oil is vaporized with compressed air at 100 lb. pressure. Standard burners are used. The flame is not more oxidizing than in the larger furnaces. Reversals are made every 15 min. Average time from charge to tap on normal heats is 4 hr.

Furnace life can only be estimated, but it is believed that the front and back walls will be the first to go, at around 200 heats. Metal temperatures during tapping have been noted as high as 3100 deg. Fahr. by optical pyrometers. The furnace crew consists of a first helper



THREE Sections of the Furnace and One of the Ladle. At upper left the size of bath is shown, with arrangement of ports. At lower left is longitudinal section through bath, showing also the regenerator chamber. Transverse section is at lower right



which are common to all steels falling therein. The exact properties of the individuals will vary considerably depending upon the percentage of carbon and chromium, and to a lesser extent upon special additions of other alloying elements, such as nickel. It does not therefore follow that all steels within a given group are interchangeable in their application, and we must still take cognizance of brand names and detailed analyses. On the other hand, it should be emphasized that all corrosion-resisting steels at present commercially produced fall into one of these three groups and therefore exhibit the general peculiarities of that group.

A most common error is the disposition of many to say "pigs is pigs" and accept or condemn all stainless steels on the performance of one grade or the performance of one group. As a matter of fact, the three groups of stainless steel have very little in common one with another—one might only say "they are all steels containing chromium and all of them have certain corrosion or heat-resisting properties." The three groups should no more become confused than should three totally different alloys like nickel silver, bronze and monel metal. Although these all contain copper and all possess corrosion-resisting properties, we are not tempted to classify them under one head for construction purposes. We should be just as careful not to comprehend all grades of stainless steel in any general statement.

For the sake of brevity the general properties of each group of stainless steels are presented in tabular form. It is not possible to deal fully with all details and exceptions, and furthermore no effort has been made to extend the table beyond the mere delineation of group characteristics. There is a considerable

†EDITOR'S NOTE: The reason for these variations has been given by E. C. Bain. See THE IRON AGE, Feb. 23, 1928, page 535.

choice of brands available in each group and they will not all serve equally well for a given purpose. The detailed properties of any given steel should be secured from the manufacturer of the brand in question, or from experiment under the required conditions of service.

It should be noted under "Analysis" that Group A has for its top limit about 14 per cent chromium, while Group B has for its lower limit about 16 per cent chromium. Steels containing from 14 to 16 per cent chromium partake of the properties of both groups. It must be understood that these group limits are not rigidly set, but fluctuate with the other elements contained in the steel. For example, stainless iron with about 0.10 per cent carbon may contain up to about 14 per cent chromium and still remain in Group A. When the carbon is raised to 0.30 per cent the chromium can be increased to 15 or even 16 per cent and the steel will still exhibit the properties of Group A.† The introduction of high manganese or nickel will also tend to raise the chromium limits of Group A and the introduction of silicon or aluminum will tend to lower them. With these reservations, the table applies to all high-chromium corrosion-resisting steels regardless of brand names or identity of manufacturer.

While it should scarcely be necessary to emphasize the term "quality" in connection with highly specialized products such as stainless steel, a word on this subject is in order. There is no grade of steel which reflects more honestly the skill of the workmen and the diligence of the inspection than stainless steel. Quality in this class of product is evident not only in narrowness of chemical limits and the purity and cleanliness of the product, but is very conspicuous in the uniformity of different shipments carrying the same brand label. It should be emphasized, however, that no amount of "quality" injected into a stainless steel will lift it from one group into another.

Iron-Silicon Equilibrium Diagram

A DISCUSSION of several published investigations on iron-silicon alloys, including an early one of his own together with careful studies of high silicon alloys, has enabled T. Murakami to prepare a complete equilibrium diagram. (Science Reports, Tohoku Imperial University, Japan, May, 1927). His original suggestion that the compound Fe_3Si_2 existed was doubted by Phragmen, but the latter has been able to find X-ray evidence of its occurrence subsequently in well-annealed specimens. Other students postulated a gamma to alpha change in alloys containing free iron, and occurring at 800 deg. to 400 deg. C., depending upon the silicon content. Murakami made careful X-ray and microscopic studies on this point, and finds only the body-centered cubic lattice characteristic of alpha or delta iron. A magnetic change does occur unaccompanied by any atomic rearrangement.

Studies on higher silicon alloys, where agreement by various investigators is far from complete, were made on special melts of Armco ingot iron plus measured amounts of carbon-free ferrosilicon. These were studied by thermal analysis, X-rays, and the microscope. All results are summarized in the diagram, the meaning of the various fields being as follows:

Area A B M P, alpha iron with silicon in solid solution

Line A₂ N O, magnetic change in iron.

Line P Q, magnetic change in Fe_3Si_2 .

Line B J, solidification of iron-FeSi entectic.

Line B M, entectic mixture of iron and FeSi.

Area B J M K, iron-FeSi entectic plus excess FeSi.

Line M L K, formation of Fe_3Si_2 by reaction of iron and FeSi.

Area P M L O, saturated alpha solid solution plus Fe_3Si_2 .

Line L O, solid compound, Fe_3Si_2 .

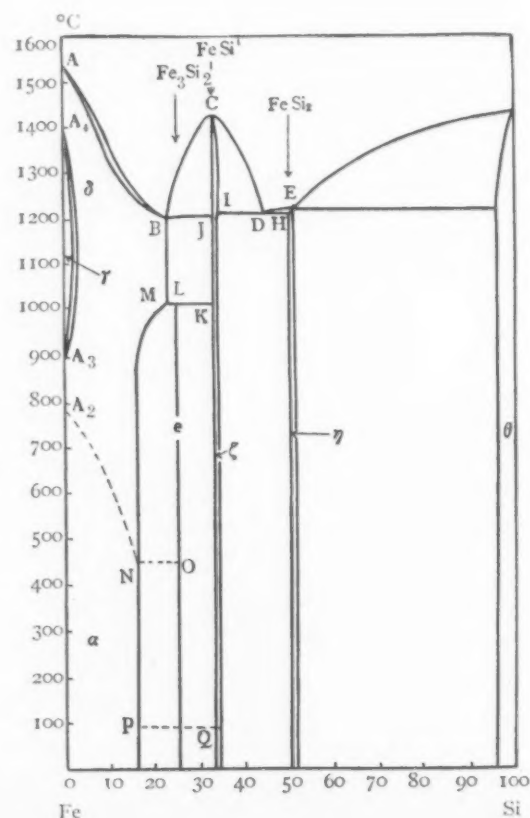
Area O L K Q, mixture of Fe_3Si_2 and FeSi.

Narrow strips at about 33 per cent silicon and 50 per cent silicon represent the ability of the compounds FeSi and FeSi_2 respectively to dissolve a small amount of silicon.

Between 96 and 100 per cent silicon, iron is held in solid solution.

The vertical band between I and H is a mixture of FeSi and FeSi_2 (each with a little silicon in solution).

The broad area between 50 and 96 per cent silicon is a mixture of FeSi_2 (with a little silicon in solution) and silicon saturated with iron.



One-Ton Acid Open-Hearth Furnace

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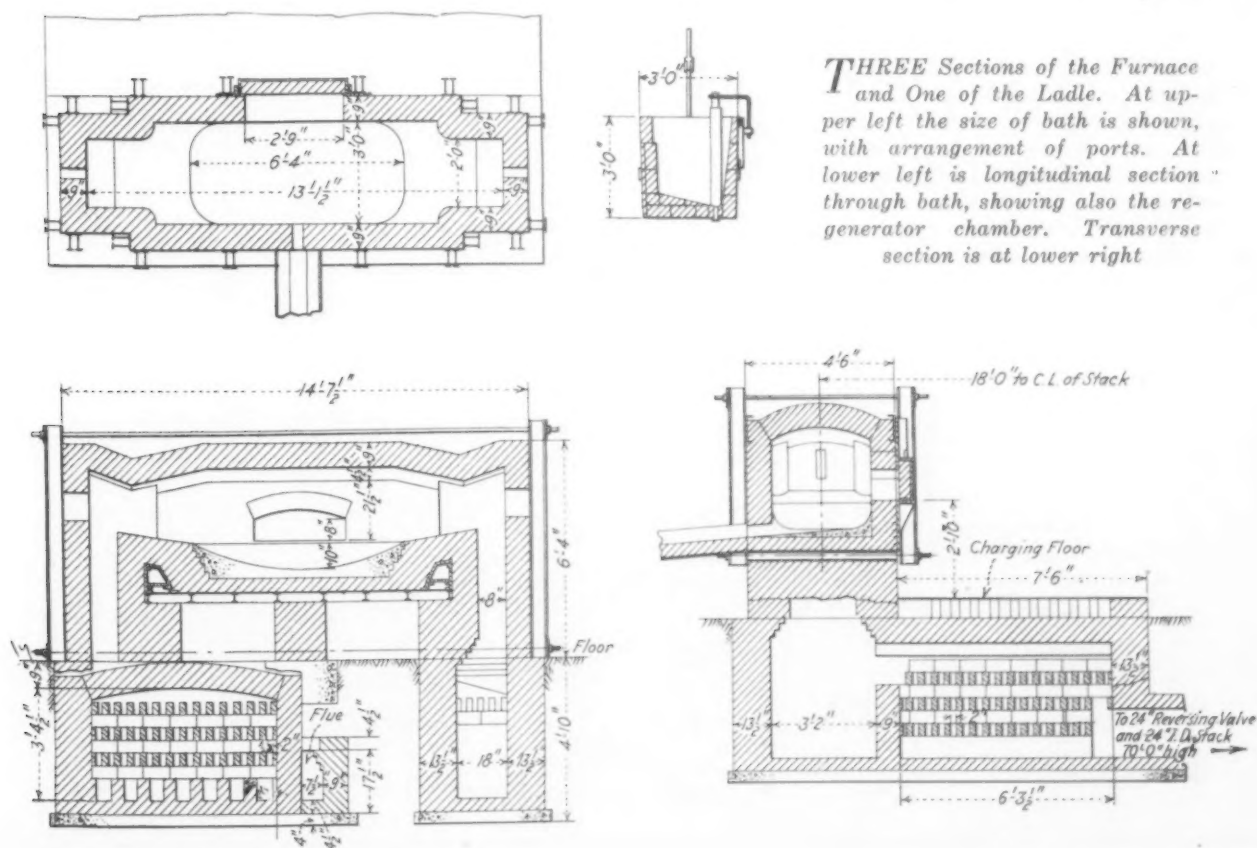
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with assistance from the regular pit gang for charging, tapping, etc. Heats as small as 1000 lb. have been made. Some of the steels have been very low in phosphorus and sulphur. Small ladles previously used for an old crucible plant were rebuilt for this furnace. Bottom pour was found to be more satisfactory than the teapot pour.

Several ranges of analysis have been worked on, which may be summarized as follows:

High-carbon steels with varying percentages of chromium from 0.30 to 1.00 per cent.

Chromium steels with carbon from 0.20 to 0.90 per cent and chromium from 1.00 to 3.57 per cent.

Chromium-molybdenum steels with carbon 0.60 to 1.45 per cent, Mo, 0.25 to 0.35, Cr from 0.80 to 2.50, and Mn from 0.60 to 2.50 per cent.

Chrome cast iron with carbon 2.75 per cent and chromium 12 to 18 per cent.

Chrome iron with carbon 2.75 per cent and chromium 23.0 to 27.0 per cent.

NEW LIST OF STANDARDS

Samples of Steels and Alloys Now Available from Bureau of Standards

THE United States Bureau of Standards is now prepared to furnish the tabulated standard samples, new and old, a list of which has not been published for some years.

Information as to the history of the standard samples, their use in checking methods of analyses, stand-

ardizing solutions, calibrating pyrometers, etc., is given in Bureau of Standards Circular No. 25. Summaries of analyses of the standard samples and general information are given in the supplement to Circular No. 25. These can be obtained without charge upon application to the Bureau of Standards, Washington. Detailed certificates of analyses are sent under separate cover to the same destination as the samples.

Orders should give both the number and name of the sample wanted. No samples of smaller size than those listed are distributed.

| Sample Number | Name | Constituents Determined or Intended Use | Weight of Sample in Grams | Fee per Sample |
|---------------|-----------------------------------|---|---------------------------|----------------|
| 88 | Dolomite | Complete analysis | 50 | \$2.00 |
| 70 | Feldspar | Complete analysis | 40 | 2.00 |
| 80 | Glass, soda-lime | Complete analysis | 45 | 2.00 |
| 89 | Lead barium glass | Complete analysis | 45 | 2.00 |
| 76 | Burnt refractory (40% Al_2O_3) | Complete analysis | 60 | 2.00 |
| 77 | Burnt refractory (60% Al_2O_3) | Complete analysis | 60 | 2.00 |
| 78 | Burnt refractory (70% Al_2O_3) | Complete analysis | 60 | 2.00 |
| 81 | Glass sand | Fe_2O_3 , Al_2O_3 , TiO_2 , ZrO_2 , CaO , MgO | 60 | 2.00 |
| 2 | Zinc ore D | Zinc | 50 | 1.00 |
| 25b | Manganese ore | Manganese, available oxygen | 100 | 2.00 |
| 26 | Crescent iron ore | Al_2O_3 , CaO , MgO | 100 | 2.00 |
| 27a | Sibley iron ore | SiO_2 , P, Fe | 125 | 2.00 |
| 28 | Norrie iron ore | Mn (low) | 50 | 1.00 |
| 29 | Magnetite iron ore (titaniferous) | Complete analysis | 50 | 1.00 |
| 56 | Phosphate rock | P_2O_5 , Fe_2O_3 , Al_2O_3 , etc. | 60 | 2.00 |
| 69 | Bauxite | Complete analysis | 60 | 2.00 |
| 71 | Calcium molybdate | Mo, Fe, Ti | 60 | 2.50 |
| 4c | Cast iron | C, Mn, P, S, Si, Ti, (Cu, Ni, Cr, V) | 150 | 2.50 |
| 5e | Cast iron | C, Mn, P, S, Si, Ti, (Cu, Ni, Cr, V) | 150 | 2.50 |
| 6d | Cast iron | C, Mn, P, S, Si, Ti, (Cu, Ni, Cr, V) | 150 | 2.50 |
| 7b | Cast iron | C, Mn, P, S, Si, Ti, (Cu, Ni, Cr, V) | 150 | 2.50 |
| 55 | Ingot iron | C, Mn, P, S, Si, Cu, Ni | 150 | 2.00 |
| 74 | Cast iron | C, Mn, P, S, Si, Ti, (Cu, Ni, Cr, V) | 150 | 2.50 |
| 82 | Nickel-chromium cast iron | C, Mn, P, S, Si, Cr, Ni, (Ti, Cu, V) | 150 | 2.50 |
| 8c | Steel, Bessemer, 0.1 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 9c | Steel, Bessemer, 0.2 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 10d | Steel, Bessemer, 0.4 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 22b | Steel, Bessemer, 0.6 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 23a | Steel, Bessemer, 0.8 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 15b | Steel, B. O. H., 0.1 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V, As) | 150 | 2.00 |
| 11c | Steel, B. O. H., 0.2 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V, As) | 150 | 2.00 |
| 12c | Steel, B. O. H., 0.4 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V, As) | 150 | 2.00 |
| 13c | Steel, B. O. H., 0.6 C | C, Mn, P, S, Si, (Cu, Ni, Cr) | 150 | 2.00 |
| 14b | Steel, B. O. H., 0.8 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 16b | Steel, B. O. H., 1.0 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V, As) | 150 | 2.00 |
| 19b | Steel, A. O. H., 0.2 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 20c | Steel, A. O. H., 0.4 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 21b | Steel, A. O. H., 0.6 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 34 | Steel, A. O. H., 0.8 C | C, Mn, P, S, Si, (Cu, Cr, Mo) | 150 | 2.00 |
| 35a | Steel, A. O. H., 1.0 C | C, Mn, P, S, Si, (Cu, Cr) | 150 | 2.00 |
| 51 | Steel, electric furnace, 1.2 C | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 65 | Steel, acid electric | C, Mn, P, S, Si, (Cu, Ni, Cr, V) | 150 | 2.00 |
| 30b | Steel, chrome-vanadium | C, Mn, P, S, Si, Cr, V, (Cu, Ni) | 150 | 3.00 |
| 32b | Steel, chrome-nickel | C, Mn, P, S, Si, Cr, Ni, (Cu) | 150 | 3.00 |
| 33a | Steel, nickel | C, Mn, P, S, Si, Ni, (Cu, Cr, V) | 150 | 3.00 |
| 50 | Steel, chrome-tungsten-vanadium | C, Mn, P, S, Si, W, Cr, V, (Cu, Mo) | 150 | 3.50 |
| 72 | Steel, chrome-molybdenum | C, Mn, P, S, Si, Cr, Mo, (Cu, V) | 150 | 3.00 |
| 73 | Steel, stainless | C, Mn, P, S, Si, Cr, (Cu, V, Mo) | 150 | 3.00 |
| 57 | Refined silicon | Complete analysis | 60 | 2.00 |
| 58 | Ferrosilicon (75% silicon) | Complete analysis | 75 | 2.00 |
| 59 | Ferrosilicon (50% silicon) | Complete analysis | 75 | 2.00 |
| 61 | Ferrovandium (high carbon) | Complete analysis | 100 | 3.00 |
| 64 | Ferrosilicon (high carbon) | Complete analysis | 100 | 3.00 |
| 66 | Spiegeleisen | Complete analysis | 100 | 2.00 |
| 67 | Manganese metal | Complete analysis | 100 | 2.50 |
| 68 | Ferromanganese | Complete analysis | 100 | 2.50 |
| 75 | Ferrotungsten | W, C, Mn, P, S, Si, Sn, As, Mo, Cu, Sb | 150 | 4.00 |
| 37b | Brass, sheet | Complete analysis | 150 | 3.00 |
| 52 | Bronze, cast | Complete analysis | 150 | 3.00 |
| 53 | Lead-base bearing metal | Complete analysis | 200 | 3.00 |
| 54 | Tin-base bearing metal | Complete analysis | 200 | 3.00 |
| 62 | Manganese bronze | Complete analysis | 150 | 3.00 |
| 63 | Phosphor-bronze bearing metal | Complete analysis | 150 | 3.00 |
| 42b | Tin | Melting point 231.8° C | 350 | 2.00 |
| 43b | Zinc | Melting point 419.4° C | 350 | 2.00 |
| 44b | Aluminum | Melting point 658.3° C | 200 | 1.00 |
| 45a | Copper | Melting point 1,083° C | 450 | 2.00 |
| 49 | Lead | Melting point 327.3° C | 1,650 | 2.00 |
| 46m | Cement (normal) | Fineness (testing sieves) | 160 | 1.00 |
| 47d | Cement (extra fine) | Fineness (testing sieves) | 160 | 1.00 |
| 84 | Acid potassium phthalate | Acidimetric value | 60 | 3.00 |
| 39c | Benzoic acid | Acidimetric and calorimetric values | 30 | 2.00 |
| 40b | Sodium oxalate | Oxidimetric value | 60 | 2.00 |
| 83 | Arsenious oxide | Oxidimetric value | 75 | 2.00 |
| 38a | Naphthalene | Calorimetric value | 50 | 2.00 |
| 17 | Sucrose | Calorimetric and saccharimetric values | 60 | 2.00 |
| 41 | Dextrose | Reducing value | 70 | 2.00 |

Unemployment Not Machine-Made

Mechanization of Industry, According to Magnus W.

Alexander, Creates New Wants and New Tasks—

Labor Reserve Normally Exceeds 1,500,000

AVAILABLE information indicates that employment conditions in the country as a whole have been improving since December, even though public attention was not focussed on the unemployment situation until late in January and in February, according to Magnus W. Alexander, president of the National Industrial Conference Board, speaking before the Fortnightly Forum at the Park Lane, New York, March 11. He characterized the claim that mechanization of industry is responsible for unemployment as a generally unwarranted contention.

"As mechanization of industry with its requirement of fewer workers per unit of production decreases production costs and prices, the demand for commodities simultaneously increases and causes not only the theoretically released workers to be reabsorbed but, in addition, calls new workers into production," Mr. Alexander declared.

The text of Mr. Alexander's address is, in part, as follows:

At all times, barring perhaps periods of warfare, there exists an unemployment situation and, therefore, an unemployment problem. I am, therefore, ready to admit that our country is facing an unemployment situation and I shall endeavor briefly to clarify the issue and to present some observations and facts on the causes, extent and effects of prevailing unemployment in the United States.

After nearly seven years, or since the depression period of 1921 to 1922, unemployment has again found its way to the front page of our newspapers and, as seems always to be the case, widely diverging guesses and assertions are made as to the extent of this unemployment and its consequences. As a matter of fact, there are in our country no comprehensive statistics available which would supply an adequate basis for measurement of unemployment. The National Industrial Conference Board, for instance, publishes every month, and has done so for many years, figures showing the fluctuating employment in about 2000 manufacturing establishments in the country employing somewhat over three-quarters of a million people.

Long-Time Changes in Occupational Distribution of Employment

These and all similar data reflect, therefore, employment fluctuations in a selected area of employment, but do not take into account new individual enterprises or new kinds of industries that are constantly springing up, nor employment in other fields of occupation. How interestingly this process of change in occupational distribution is going on is well illustrated by comparing United States Census figures of 1920, the latest available data, with similar information for 1870. In this 50-year period with its tremendous growth in gainfully occupied, from 12,500,000 to somewhat over 41,000,000 in a population of respectively 38,500,000 to substantially 106,000,000, the number of farmers and agricultural laborers per million population decreased from 152,100 to 95,100 or by about 37 per cent, while brick and stone masons decreased from 2300 to 1300 or by 43 per cent; blacksmiths from 3700 to 1850 or by 50 per cent; and boot and shoe workers from 4400 to 2900 or by 34 per cent, with servants, housekeepers and stewards decreasing from 25,300 to 16,300 or by 36 per cent. On the other hand, barbers, hairdressers and manicurists per million population increased from 621 to 2045 or by 229 per cent, and clerical workers in offices and stores from 8060 to 41,260 or by over 460 per cent.

Labor exchanges and employment bureaus of all sorts, public and private, are making reports from time to time, but even a marked increase for a certain time in applications for work, the same as in applications for charity to charity organizations, while it would generally suggest increasing unemployment, would hardly give a basis for accurate measurement of the number of unemployed. Then there are the valuable reports of unemployment among trade union members. But inasmuch as all trade union membership in the United States represents only about 10 per cent of all gainfully occupied, these data can hardly be called representative. They doubtless indicate conditions in highly labor-organized industries and in the few localities where the reports originate.

Statistics Show Considerable Range

Neither is the lack of generally accepted, broad statistical information, and with it the opportunity for guessing, a new phenomenon. In the reports of the President's Conference on Unemployment in 1921, issued under the auspices of Secretary Hoover, the number of unemployed at that time was placed at from "four to five millions." The United States Bureau of Labor Statistics furnished the United States Senate in August, 1921, an estimate of 5,735,000, basing its estimate on differences in numbers carried on payrolls in July, 1921, as compared with the peak of employment in 1920. It should here be remembered that 1920 was a year of high general inflation of production, prices and wages, in consequence of which many persons were drawn into industrial and other occupational employment who ordinarily would not have done so, such as women, young men and girls who would have remained at school or continued with household duties. When the inevitable contraction in business came, many women who had gainful jobs in 1920 returned in 1921 and 1922 to their homes for domestic duties, and many youths who had been attracted by high wages into the industrial establishments returned to their schools for further education. It would, therefore, seem clear that the 5,735,000 estimated by the United States Department of Labor as unemployed in 1921 did not picture unemployment in the usual sense.

Normally Unemployed Number 1,500,000

At that time, the National Industrial Conference Board published in the press an opinion that the total number of unemployed might be placed at about 3,500,000, and this figure was not challenged either by Governmental or private authority and was subsequently requoted many times. The Conference Board called attention at the same time to what might be considered a normal unemployment, or a normal "labor reserve," in our country of about 1,500,000 persons, composed of those who are unemployable because of sickness and similar reasons, of casual workers and drifters, seasonal workers who draw high wages because of the intermittent character of their employment and who, therefore, usually do not want to accept employment in other lower paid occupations, and of those who actually are deprived of opportunity of employment even though they are honestly seeking it. Considering our present population of perhaps 118,000,000, and our about 43,000,000 gainfully occupied persons, a steady minimum labor reserve, so-called, of about 1,500,000 would be relatively small.

We have definite indications that there has been a decline in employment in 1927, but there are also similar indications that employment since December, 1927,

has again been slightly increasing, and the increase has continued until the present time.

Machine Production Not Cause of Unemployment

There has, however, in later years come a new aspect into the unemployment situation that seems not to be fully understood and, therefore, is leading to confusion of thought. That is the superficial interpretation of the effects of mechanization of industry. This substitution of power-driven machinery for manual labor, it is claimed, is throwing people out of work, and a magazine writer recently stated that "the price of industrial progress is unemployment." If this conception were true we might as well renounce our entire system of present-day civilization and return to the more primitive conditions of living as still exist in certain parts of Asia, where in spite of immense natural resources millions of people are near the starvation line or actually starving.

Let us concretely analyze the situation as the National Industrial Conference Board has found it by its study of the latest available comprehensive data, those revealed in the United States Census of Manufactures for 1925. At that time, 71 wage earners instead of 100, and 82 managerial and supervisory persons instead of 100, produced the same volume of production as was obtained in 1914. The cost of management in 1925 was actually 10 per cent less and the cost of labor, in spite of wage levels about twice as high as those prevailing before the war, was actually reduced by about 4 per cent per unit of production in contrast with the cost in 1914. Nor was this productivity of the wage earners achieved by longer hours or harder work, for the number of hours in 1925 per worker employed were about 9 per cent less than in 1914 and yet the productivity per wage earner was actually 40 per cent greater. A study of several hundred corporation returns leads me to say that this general picture holds good also for 1927, even to an increasing degree. This almost paradoxical condition is explainable largely on the ground of a more than 30 per cent increase in mechanical power in the productive process, of improved machinery, tools and production methods, of better organization in the utilization of human factors and their better coordination with all other production factors.

This process of mechanization, resulting in greater productivity per worker employed, has been a fundamental factor in our post-war national prosperity and has attracted world-wide attention. It has multiplied the available stock of consumption goods, has made possible the wider use of many products formerly in the class of luxuries, and is reflected in an effectual increase of our national wealth and our annual national income by about 40 per cent since 1914.

Released Workers Find New Occupations

The very pertinent question, however, arises as to what has become of the 29 per cent of workers in manufacturing without whom the same amount of production is now being carried on as compared with 1914. The answer is that although, as stated before, productive output per wage earner between 1914 and 1925 had increased by 40 per cent, the total manufacturing production in the same period increased over 65 per cent and necessitated an increase in the required labor force of about 1,500,000 wage earners. In other words, while 71 men in 1925 did produce as much as 100 men did in 1914, the demand for manufactured goods at their lower production cost and selling price expanded sufficiently to reabsorb not only the 29 per cent of workers theoretically released, but in addition called 1,500,000 more workers into action. The result was that the value of manufacturing production in 1925 amounted to nearly \$63,000,000,000, as against only \$24,000,000,000, in 1914, but manufacturing used nearly 36,000,000 hp. for its processes as against only 22,250,000 hp. in 1914. Consequently, an increase of 1,500,000 workers, but at the same time an increase of 13,750,000 hp. resulted in an increase in production of \$39,000,000,000, of commodities within the 12-year period from 1914 to 1925.

These observations refer only to manufacturing industries. A similar contraction of the number of workers employed has, however, been found to have occurred in transportation, construction, mining and agriculture,

and for similar reasons as in manufacturing. But all these activities do not exhaust the entire field of gainfully occupied. The point which I want to emphasize here is that the process of mechanization in industry is a gradual one, leaving ample leeway for adjustment. Moreover, only in rare instances does the substitution of machinery for hand labor actually remove large numbers of workers from the payroll.

It is a well demonstrated economic principle that increased production creates new wants, and that new industries bring with them new demands for both goods and services.

Labor Works Fewer Hours and Earns More

Increased mechanization of industry with its mass production at lower cost has had another very vital effect upon the economic status of the wage earner and is of great significance in relation to temporary unemployment such as we have no doubt been facing in the past few months. Under these new conditions of production, industry has been able to maintain the very high wage levels which the circumstance of the World War helped to establish, even though the cost of living has declined considerably from the peak of the post-war inflation period. At the present time, wages in manufacturing are considerably more than twice as high as they were in 1914, while the cost of living is only about 63 per cent above the level of 1914. The net result is that the real wage, that is, the purchasing power of the wage which the average industrial worker receives in his weekly pay envelope, is now by about one-third greater than it was just prior to the beginning of the World War. In other words, the worker of today, performing the same class of work and even during fewer hours of the week, can buy with his average weekly pay envelope fully one-third more of the same goods of the same quality that he bought in 1914 or, correspondingly, can buy goods of higher quality than he could afford to buy in 1914. In addition, employment has been fairly stable in the past five years or more with the exception of a brief interruption in 1924.

Great Increase in Savings Insurance Against Unemployment

The average industrial worker is thus enjoying a greater margin of earnings over his necessary living costs and is also enjoying stable earnings over a consecutive period of years. The wage-earning population is, therefore, in a better position to cope with temporary unemployment than it has been in our industrial history prior to the World War, when opportunity for saving money was considerably smaller. With a population of about 100,000,000 in 1914, the savings deposits in banks, building and loan association assets and life insurance premiums, all forms of savings of the great mass of people, amounted to \$14,700,000,000, and in 1926, with an estimated population of 117,000,000 people, they amounted to \$43,800,000,000. Eliminating the population increase, the growth in savings in the short span of 13 years was nearly 150 per cent per capita of population.

On the whole, while I will not undertake to estimate the total number of unemployed at the present time, I believe that there is a temporary condition of unemployment in excess of the so-called normal. I do not consider it, however, as acute or as critical. The weather man may be blamed in part for this condition. We must not forget, also, that certain extraordinary conditions, like the strike in the bituminous coal fields, are contributing to the amount of unemployment, although the solution of this particular problem transcends the field of unemployment relief. Taking it all in all, the striking feature is not that we have at this time of the year a somewhat greater amount of unemployment, but that the situation did not, as heretofore, come gradually to our attention, but was almost precipitated into the arena of public discussion by the dramatic way in which the Governor of New York State called attention to it just about a month ago. The main reason why we needed some one in a high place to call our attention to the unemployment situation, rather than to have the situation call attention to itself, may be found in the fact previously

(Concluded on page 780)

Emergency Repairs to Sheet Mill Drive Made by Cutting Blow Pipe and Oxygen Lance

BY W. I. GASTON*

AN INSTANCE of the manner in which the oxy-acetylene cutting flame is essential to the steel mill master mechanic in keeping essential units in constant operation occurred recently in a sheet mill in the Chicago district.

It was reported by the mill superintendent that the big split gear on the main drive was slipping on the shaft and it was impossible to tighten up the bolts enough to prevent slippage, even though the mill was throwing no undue load on the engine. Inspection showed that the gear had been already drawn up to the point where the split hub was closed, shoulder to shoulder. It would be necessary to cut away some metal in order to renew the grip on the shaft.

The master mechanic estimated that repairs would require taking the heavy 23-ft. gear apart, moving it to the machine shop and cutting $\frac{3}{4}$ in. of metal from one-half of the hub with a planer. Dismantling, handling, machine shop work and re-erection would require four days and cost about \$2,000.

Since the mill was then operating on a 100 per cent production basis, stoppage of work for three days would have meant further losses to the plant in profits, overhead, delayed production schedules and general all-around disorganization. In order to avoid, if possible, the large losses which always follow a shutdown in the height of the rush season, a service engineer of the company supplying oxygen to the steel mill was asked whether the excess metal could be removed by the cutting flame without removing the gear from the shaft. He reported that it could be done by a cutting blowpipe supported by an oxygen lance and offered to supervise the work, so it would be promptly done without damage to the main shaft.

It required 14 hr. for five men to remove the bolts and do this job of cutting. The total cost of the work, including oxygen, acetylene, labor and steel pipe for the oxygen lance, amounted to about \$110.

The illustration gives some idea of the size of the gear. The section cut was 3 ft. 11 in. in its greatest

length and 15½ in. in breadth; the cutting blowpipe removed altogether about 470 cu. in. of cast steel from the hub. A gap smooth enough for the purpose was left behind.

The cost of oxy-acetylene cutting was just a little over one-twentieth of the estimated cost of machining and handling to the machine shop and back. The important factor, however, was the saving in time. The

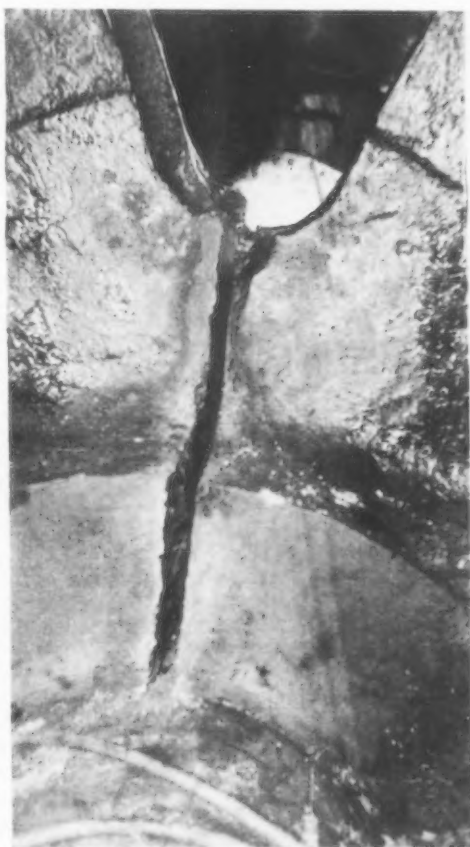
job was completed by Sunday afternoon and the gear was tight in place ready for operation on Monday morning. Some time subsequent to this first work, when a good opportunity occurred, a similar cut was made on the opposite side of the hub in order to equalize the strain on the bolts and the internal strains in the hub and spokes of the gear.

About the only unusual feature of this gear job was the fact that the shaft must be protected. Most heavy cutting with the oxygen lance is such that the slag produced can run freely out the bottom of the cut. In the latter case the work may be done as follows:

One workman handles a cutting blowpipe. His cut starts at one corner and opens a kerf 2 in. wide, penetrating 6 to 8 in. and delivering a stream of hot slag dripping out of the bottom of the cut. After this slot has advanced 3 in. into the metal, the oxygen lance is brought into play by the second operator, and follows along after the cutting blowpipe. The

lance should be $\frac{1}{4}$ -in. pipe (no larger). Oxygen pressure at the regulator varies with the variety of steel, about 75 lb. for medium carbon or machinery steel containing up to 0.5 per cent carbon, and 100 lb. for low-carbon or soft steel. The pressure should not be so high as to "blow the flame cold."

It will be found that the stream of oxygen coming from the lance will pick up the hot slag drip prepared by the cutting blowpipe. The lance then is moved slowly down the face of the cut close behind the advancing incandescent region so produced. On reaching the bottom, the lance is lifted, and again lowered behind the glowing mass of slag and metal. The motion is like a cross-cut saw, up and down, each time removing a layer of metal.



Cut Made in Hub of 23-Ft. Gear by Oxygen Lance

*Technical publicity department, Linde Air Products Co., New York.

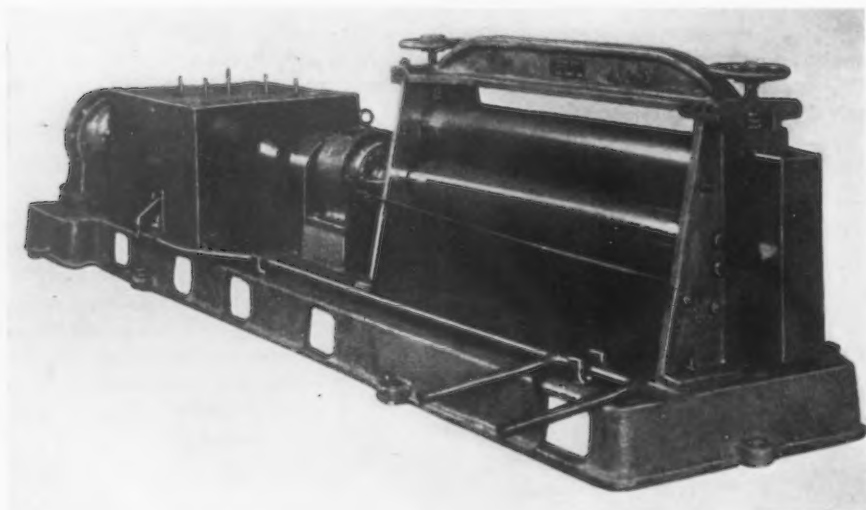


LARGE SHEET PACK OPENER

Machines May Be Operated from Either Side and Moved from One Location to Another

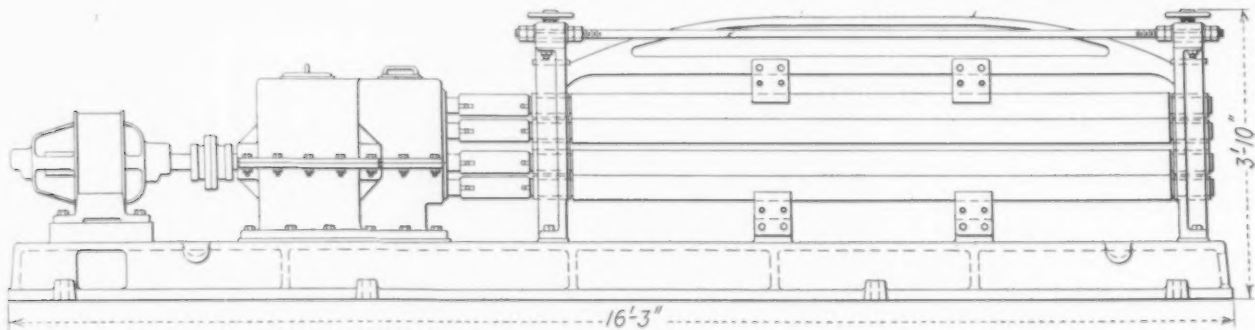
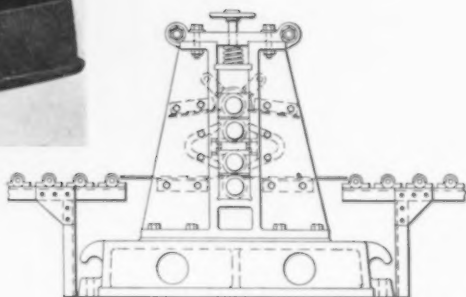
THE Aetna-Standard Engineering Co., Youngstown, Ohio, is adding to its line a sheet pack opener designed to handle 60-in. by 120-in. sheets when passing through the machine at an angle of 15 deg., and longer and wider sheets if straightened before passing through

supported top and bottom and horizontally by brass backing-up bearings. They are adjusted by means of hand screws. The adjustment and play of the rolls is such that packs of sheets can be opened between any two sheets, that is, taking one sheet off the top of the pack, opening the pack in the middle, or taking one sheet from the bottom. The rolls are driven by flexible couplings from steel pinions that are mounted in an oil-tight case with the reduction gears. The machine is driven by a 20-hp. reversing motor which is controlled



THE Smaller Sheet Pack Opener, Shown at the Left, Is for Widths Up to 36 In. The larger machine, below, is for sheets up to 60 x 120 in., when passed through the opener at 15-deg. angle

FOR Convenience in Handling the Packs, a Light Roller Table Is Provided on Each Side of the Machine, as Shown in the End View at the Right



the rolls. A smaller opener of the same general design, for widths up to 36 in., is also available.

Packs of sheets can be opened from either side of the machine. For instance, should a pack of six sheets be tightly stuck, it would be desirable to open one sheet from the pack going in one direction, and another sheet from the pack going in the opposite direction. In this way there is no time lost in handling the pack from one side to the other. For convenience in handling packs, a light roller table is provided on each side of the machine. The machines can be operated by one man and a helper.

The base of the machine is of cast iron and lifting lugs are provided so that the unit can be moved to different positions in the mill. It also has foundation bolt holes for use when the opener is to be set on a permanent foundation. The overall length of the unit is less than 17 ft. and the overall width is 4 ft. There are four opening rolls, which are of forged high-carbon steel and are 4 in. in diameter and 96 in. long. These rolls are carried in cast-iron housings and are backed up top and bottom, as well as horizontally, to take the pull of the sheets. At the front and back of the two middle rolls there is a U-shaped cross bar, over which the sheets being separated pass. This bar has a tendency to break the sheets apart without cutting or scratching them.

The rolls are carried in brass-bushed bearings and

from a push-button station on a swinging arm which may be conveniently located on either side of the opener.

Acquires Lamb & Nash Line of Shears

The Shaw Crane-Putnam Machine Co., Inc., which is owned by Manning, Maxwell & Moore, Inc., 100 East Forty-second Street, New York, has purchased the sheet-metal cutting machine line of the Lamb & Nash Co., Boston.

Rotary gang slitting machines for shearing tin plate, blue annealed and other steel sheets, cold-rolled strip steel, and brass, copper and aluminum sheets and strips, are included in the line, as well as squaring shears for use in sheet mills. These machines will be built at the Putnam works, Fitchburg, Mass., of the Shaw Crane-Putnam Machine Co.

New Cold-Rolling Equipment

Several new cold-rolling mills are to be furnished to the Sharon Steel Hoop Co., Sharon, Pa., by the E. W. Bliss Co., Brooklyn. About half of these mills will be of the cluster type. Some of the mills will be arranged in tandem and will be fitted with roller bearings, motor screwdowns, etc. The tandem mills will have the Clark tension control, which permits the metal to be rolled under tension between stands.

PLOW BOLT COLD HEADER

Single-Stroke Solid-Die Unit Incorporates Relief Mechanism and Other Features

A SINGLE-STROKE solid-die cold header, with relief mechanism and other features intended to make for rapid and economical production of plow bolt blanks or similar upsets, is being marketed by the E. J. Manville Machine Co., Waterbury, Conn.

Except for the relief mechanism, the general construction of the machine is similar to the company's recent model single-stroke solid-die rivet or ball headers. Three sizes, designated as the Nos. 375C, 500C and 625C respectively, are available. No. 500C, which is shown in the illustration, is for making plow bolts from $\frac{3}{8}$ to $\frac{1}{2}$ in., inclusive, in diameter, and from $\frac{3}{4}$ to $2\frac{1}{2}$ in. long. Production is at the rate of 125 bolts per min. By reducing the speed, the machine can be used for making plow bolts 3 in. long.

The 500C machine will make a $\frac{3}{8}$ or $7/16$ -in. carriage bolt with a head approximately $\frac{3}{4}$ in. in diameter, using 0.330-in. wire. The length of the square would be about $3/16$ in. by 0.360 in. across flats. A $\frac{3}{8}$ -in. cut thread carriage bolt can also be made and a standard head with square $\frac{1}{4}$ in. long by 0.370 in. across flats developed. The machine will also make a Deering oval guard bolt that has an oval top and long countersunk head with four small keys on the side of the countersink. No. 3 plow bolts with a long square can also be produced.

The frame of the machine is of high-tensile cast iron and is heavily reinforced. An arch or tie is cast integral across the main crankshaft journal bearings to add to the strength and rigidity of the frame and to prevent deflection of the crankshaft and journal during the interval of heading. The heading ram side and bottom bearings in the frame consist of hardened and ground inserted steel plates, which, in the event of wear, can be removed and reground to a parallel thickness. Machines with frames of cast steel can also be furnished.

Crankshafts are of cheekless design, of chrome-nickel steel and heat treated. The crankpin and journal sections are of large proportions to minimize deflection. Journal bearings are of nickel bronze and are provided with means of lubrication.

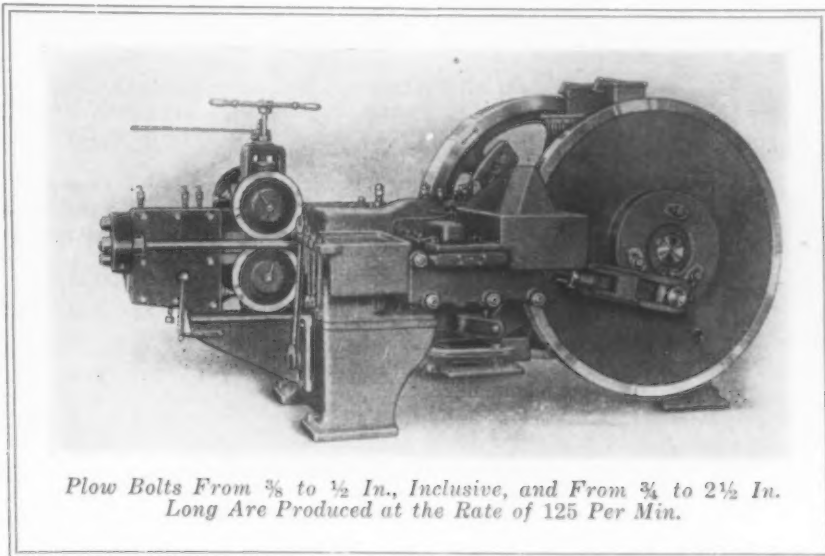
The heading ram and bearing construction is of the same type as in the company's models B and C ball headers. To safeguard against bearing mutilation, use is made of hardened and ground inserted ram bearing plates in bottom and side bearings in the frame. To release the pressure on the blank and heading die, whenever the header is stopped on dead center, a large adjustable wedge is provided in the heading ram or gate. The wire feed, located on the left side of the machine, is usually of ratchet type, but a friction feed can be furnished if desired. The feed is operated from an eccentric on the crankshaft, connected with an adjustable rocker lever. In addition to general adjustments of the wire feed, made in the large feed rocker on the side of the machine, a finer feed adjustment, for small variations, is provided in the feed rocker on the lower feed shaft. Improved roll-feed bearing construction is a feature emphasized. Bearings in the feed frame are

of hardened and ground tool steel and wear is taken on bronze bearings, which may be readily replaced when worn.

It is stated that the chief advantage of making plow bolts on this type of machine is in the relief mechanism, which permits the knock-out pin to recede while the head is being formed. This mechanism includes a substantial toggle unit, which is operated by a cam slide pivotally connected to a lower projection of the pitman connection, thus producing an elliptical motion as it actuates the movement of the toggle mechanism.

When the wire blank is pushed into the heading die and against the knock-out pin, that portion of the blank which projects unsupported in the front of the die is forced into the mouth of the die by the heading punch. In compressing the metal to form the head it is necessary, in order to fill out the square portions of the head, that the knock-out pin recede just as the first portion of the upset is formed in the mouth of

the die. To properly coordinate the knock-out pin relief motion in relation to the compressed portion of the upset, suitable adjustments have been provided in the connection between the pitman connection and the reciprocating cam in the toggle motion. Fine adjustments, for varying the length of the blank, are also provided in the relief mechanism.



Plow Bolts From $\frac{3}{8}$ to $\frac{1}{2}$ In., Inclusive, and From $\frac{3}{4}$ to $2\frac{1}{2}$ In. Long Are Produced at the Rate of 125 Per Min.

A cutting-off mechanism of improved construction is employed. The area of the cut-off slide has been markedly increased on the thrust side and the cutter bar is equipped with three bearings to minimize wear. The cutter bar is provided with an adjustable stop. By means of a spring mechanism, in combination with the hardened cam insets in the reciprocating slide, the bar can be adjusted to feed through or in front of the cut-off knife.

The punch block and die block are of hammered alloy steel, heat-treated. A split die block can be furnished in place of the solid block if desired. A foot brake is standard equipment, as well as a gravity feed lubricating system with piping leading to important parts of the machine. When motor driven, the motor is attached to a pad at the rear of the frame of the machine. The floor space occupied by the No. 500C machine is 81 $\frac{1}{2}$ in. by 125 in. and the weight, net, is 17,188 lb. Approximately 15 hp. is required.

Pressure Burners Ordered for Blast Furnace Stoves

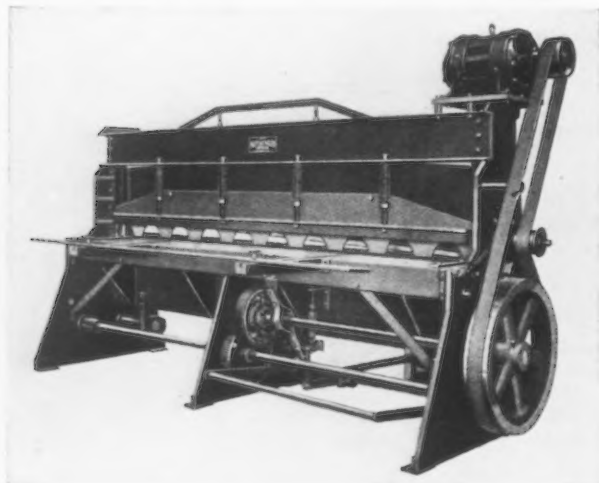
Pressure burners for blast furnace stoves have been ordered from the Freyn Engineering Co., Chicago, by the Sharon Steel Hoop Co., Sharon, Pa., and the Republic Iron & Steel Co., Youngstown, Ohio. This increases the number of Freyn-design pressure burner installations to include eight different plants.

These burners will be of the unit or integral type and will be motor driven. Both installations will have automatic control, governing the blower speed to supply the correct amount of air for the gas available. For the Republic installation a large burner, capable of burning 14,000 cu. ft. of gas a minute will be supplied. This size of burner is required because of the large size stove (95,000 sq. ft. heating surface) on which the burner will be operated.

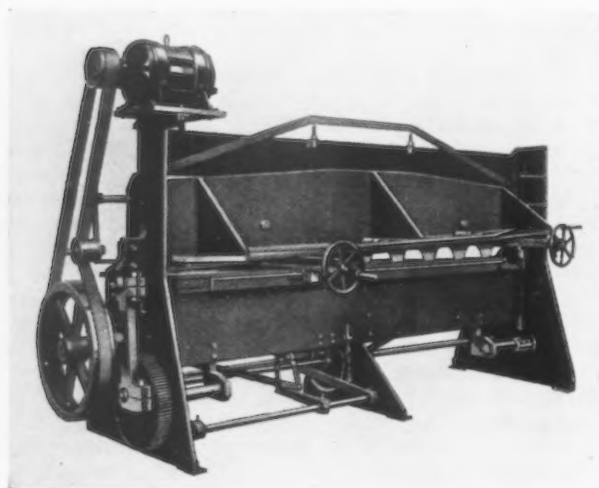
New Shears for 3/16 and 1/4-In. Mild Steel

A new shear, in four sizes, with capacity for cutting mild steel 3/16 in. by 8 ft., 3/16 in. by 10 ft., 1/4 in. by 8 ft., and 1/4 in. by 10 ft., respectively, has been placed on the market by the Kutscheid Mfg. Co., 911 West Forty-ninth Place, Chicago.

The housings, upper knife-bar and bed of this machine are of high-carbon steel plates, the upper knife-bar and bed being of welded construction. The sliding surface of the upper knife-bar at each end is faced with phosphor-bronze. The crank gears at each end of the machine are carried on high-carbon steel shafts, the bar which connects them to the upper knife-bar being also of high-carbon steel. The connect-



Housings, Upper Knife-Bar and Bed Are of High-Carbon Steel Plate, the Knife-Bar and Bed Being of Welded Construction



When the Treadle Is Depressed the Upper Knife-Bar Makes One Complete Stroke; When Held in Depressed Position, It Operates Continuously

ing bars are split at each end and equipped with phosphor-bronze bearings. The pin through the bar and crank gear is of Nikrome axle steel. All gears are of steel, with cut teeth, and all bearings are split so that they may be taken up for wear. The shaft bearings are of Bearingoy metal and are grooved for oiling.

Simplicity of operation and effective performance of the holddown are features emphasized. Steel pins, which are welded at each end in back of the holddown, rest on two pins protruding from the upper knife-bar. These pins are arranged so that when the knife-bar is at its highest point the holddown is 1 in. above the table. When the upper knife-bar lowers to 1 in. above the table, pressure is applied on the metal just before the knife enters it by means of four large springs. As the upper knife-bar returns to its highest point at the completion of the stroke, it raises the holddown to its original position. An automatic friction

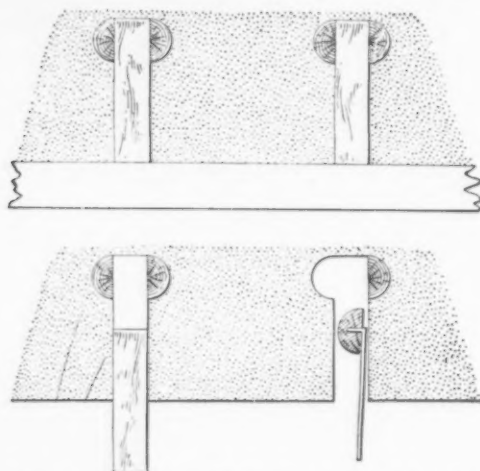
clutch, with positive action, is employed. With a slight depression of the treadle the upper knife-bar makes one complete stroke and stops at the highest point. If the treadle is held in the depressed position the upper knife-bar will operate continuously. By means of a safety lever the upper knife-bar can be stopped at any point during the stroke.

Sectional or composite knives, with one cutting edge, are standard equipment, as well as front, side and back gages. The front gage has a steel scale set in the bed of the shear, and the back gage is of screw-adjusting type with steel scale and pointer. Lubrication is by means of oil cups at each bearing, but a centralized lubricating system can be furnished as an extra. The shear has been designed so that tapered roller bearings may be applied.

Beaded Ribs on a Pattern

To facilitate their removal from the mold, beaded ribs are sometimes arranged on the pattern in the mold as shown in a recent issue of *Power*. The patterns for the beads are separate from those for the ribs and the rib patterns are withdrawn first, as will be noted. Then the bead patterns are taken out by means of a small tool arranged to grip them through sockets left in the bead pattern.

Beaded ribbing has been used all over the outside of the casings for many steam turbines. The principal object of this was to avoid deformation under operating



Illustrating the Method of Withdrawing the Pattern, in Sections, in Preparing a Mold for Beaded Ribs

temperatures, while a secondary object was to minimize vibration. Loose cores would be likely to shift, thus interfering with uniformity of section. The design shown was adopted so that the beads could be picked conveniently out of the mold.

Automotive Parts Makers Merged

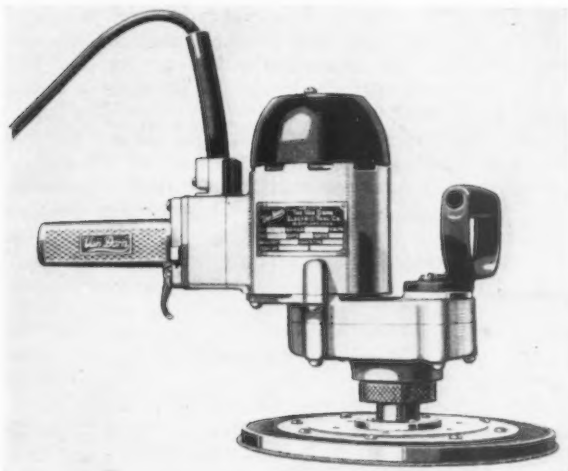
The Diamond Motor Parts Co., St. Cloud, Minn., has taken over the Gill Mfg. Co., Chicago, manufacturer of piston rings, and the Schlieder Mfg. Co., Detroit and Milford, Mich., maker of valves for the automotive industry. Operations have been discontinued in the Chicago and Milford plants, and all machinery, equipment and stocks have been removed to the Diamond plant at St. Cloud. The company now makes a complete line of piston rings, piston pins, diachrome, steel and cast head valves, steel and bronze bushings, steering knuckles, tie rod and spring bolts, water pump shafts and impellers. Plans of the company include the merging of other parts manufacturers, increasing the number of direct factory branches.

George G. Bouthinon, head of the Diamond company, is president, treasurer and general manager of the new company. E. J. Smith, president of the Gill company, is vice-president and will be in charge of sales, and V. W. Schlieder, vice-president of the company bearing his name, will be secretary and in charge of the equipment division of the new corporation.

Portable Electric Grinder and Sander Employs Flexible Disk

An electric grinder designated as the Flex-Disc, and intended to meet the demand for a portable grinding and sanding machine that will surface both metal and wood, has been brought out by the Van Dorn Electric Tool Co., Cleveland.

The general arrangement of the machine, including the motor, is the same as that of the company's electric drills. The motor can be operated either on alternating or direct current and has a no-load speed of 2400 r.p.m. The grinder is equipped with a 9-in. flexible rub-



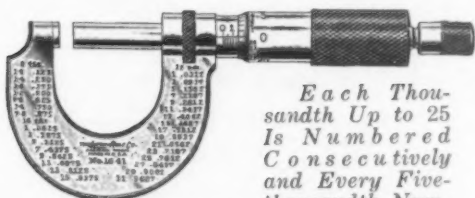
A Felt Polishing Pad, With Removable Cloth Bonnet, Is Interchangeable With the Rubber Pad

ber pad which serves as a base for 9¼-in. diameter abrasive disks, the flexible disk feature being emphasized as permitting grinding or sanding operations on curved surfaces. A smaller flexible rubber pad, 6 in. in diameter, is also available for use with the machine, and when the 9¼-in. abrasive disks become worn they may be cut down for use on the 6-in. flexible pad. A Duco or lacquer polishing pad of heavy felt, and covered with a removable cloth bonnet, is interchangeable with the flexible rubber pad for polishing operations. When the removable bonnets, five of which are supplied with each polishing pad, become soiled they may be laundered. In addition to the 9-in. flexible rubber pad, regular equipment includes 12 9¼-in. abrasive disks of various grits, and 15 ft. of cable, with plug. The machine can be furnished for use on 110, 220 or 250-volt current.

Micrometers Arranged for Rapid Reading

Micrometers with graduations intended to facilitate reading have been brought out by the Lufkin Rule Co., Saginaw, Mich.

Instead of numbering every five-thousandths on the sleeve of the tool, each thousandth is numbered consecutively up to 25, with every five-thousandths number showing more prominently. This tends to simplify read-



Each Thousandth Up to 25 Is Numbered Consecutively and Every Five-thousandth Number Shows More Prominently

ing and assist in eliminating mistakes, as it is only necessary to add the figure showing at the reading line on the sleeve to the last 25-thousandths line showing on the hub of the micrometer.

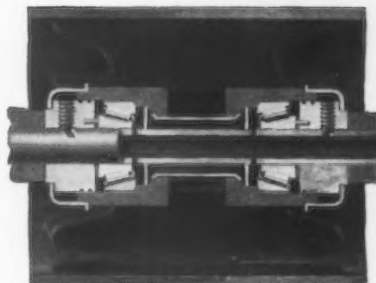
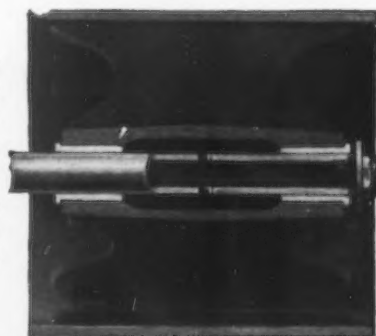
Steel strip for shoe hooks, eyelets and buttons has been placed on the free list in connection with changes made by Italy in its tariff, and have a period of one year for reexportation.

Conveyor Carriers Arranged to Use Three Types of Bearings

Belt carriers for belt conveyors manufactured by the Jeffrey Mfg. Co., Columbus, Ohio, have been standardized so that the same stands and bases can be used with any of three types of pulleys—plain bearing, bronze-bushed or roller bearing.

The pulleys are of gray iron and are made with open ends. In place of solid ends three arms connect the hub and the roll, additional rigidity being provided by six ribs between the arms. Pulleys with plain or bronze-bushed bearings have hubs which are cored out to form large recessed grease pockets, as shown in the illustrations. The latter connect with the Alemite pressure lubrication fittings at the end of the hollow shaft, and are designed to hold a reserve supply of grease. An advantage claimed for the grease pocket is that the grease does not harden in the feed holes. Plain bearing pulleys that are worn may be drilled out and put back into service with new bronze bushings. The

The Plain and Bronze Bushed Bearings Have Cored Out Hubs Which Form Grease Pockets Connecting to Fittings at End of the Shaft



The Pressure-Greased, Sealed Roller-Bearing Pulley, at Left, Is for Materials That Are Severe on Metal Bearings

roller-bearing pulley, which is pressure greased, accurately fitted and grease sealed, is for use on belt conveyors carrying coke breeze or other materials that are severe on metal bearings. The labyrinth construction is emphasized as providing five pairs of closely joined metal surfaces which keep powdery abrasives from reaching the bearings. In addition, the grease under pressure from the inside tends to flow all dirt outward. Slots are provided in each collar to permit adjustment and concentric running.

"The Story of Iron" Motion Picture Produced by Bureau of Mines

WASHINGTON, March 13.—In cooperation with three large iron companies the Bureau of Mines has just produced "The Story of Iron," an educational motion picture. The film shows workings of iron ore mines in the various districts of the country, and goes into methods of mining, processes of treatment, etc., unloading at docks and shipment to furnaces. Another series of pictures shows blast furnace operations. Copies of "The Story of Iron" are available for distribution to schools, churches, clubs, civic and business organizations, miners' local unions, scientific societies and other bodies. The only charge to the exhibitor is the cost of transportation. Detailed information may be obtained from the Graphic Section, Pittsburgh Experiment Station, United States Bureau of Mines, Pittsburgh.

The Consolidated Steel Corporation, jobber in sheets and strip steel, has moved into a new warehouse at 2421 Smith Avenue, Detroit.

Testing Society's Committees Meet in Washington Next Week

Arrangements have been completed for holding a group meeting of committees of the American Society for Testing Materials at the Mayflower Hotel, Washington, March 21 to 23. The following committees in the metal-working field are scheduled: A-1 on steel, A-2 on wrought iron, A-3 on cast iron, A-5 on corrosion of iron and steel, A-6 on magnetic properties, A-8 on magnetic analysis, B-1 on copper wire, B-3 on corrosion of non-ferrous metals and alloys, D-1 on preservative coatings for structural materials, joint committee on phosphorus and sulphur in steel, and a few sectional and sub-committees of other major committees.

Inspection trips will be provided to various Government and other institutions. At an informal dinner on Thursday evening, March 22, one or two prominent speakers will be provided. Entertainment and other features are in the hands of a local committee of which Jerome Strauss, material engineer United States Naval Gun Factory, is chairman.

Pacific Northwest Iron and Steel Conference

The Northwest Iron and Steel Conference held its first meeting recently at Tacoma, Wash. It was attended by about 100 men representing the iron and steel industry of the Pacific Northwest States. Ray M. Hudson, Department of Commerce, Washington, and Charles F. Abbott, executive director American Institute of Steel Construction, New York, were among the speakers. E. C. Pape, president Willamette Iron & Steel Co., Portland, Ore., was elected chairman of the conference, whose next meeting is to be held at Olympia, Wash., Feb. 27, 1929.

Waste Material Dealers to Meet

The annual convention of the National Association of Waste Material Dealers, Inc., Times Building, New York, will be held March 20 and 21 at the Hotel Astor. The fifteenth annual dinner of the association is scheduled for March 21. Among the divisional meetings the first day of the convention, the foreign trade division meets at 12.30 and the metal division at 2 p. m. Following the general meeting of the convention on the second day, the scrap iron division will meet at 2 p. m.

Latin-American Trade to Be Subject at National Foreign Trade Convention

Trade with Latin America will be the principal theme at the fifteenth annual convention of the National Foreign Trade Council, to be held at Houston, Tex., on April 25-27. Business delegations from a number of Latin-American countries will attend the meetings and will confer with American executives on sales and distribution practices which are most successful south of the Rio Grande.

A special feature of the convention will be a series of nine addresses on the basic factors of export merchandising which will take the place of the usual group sessions of the convention. These talks will cover the entire subject of export practice, including preparatory market analysis, legal protection, trademarks and patents, distribution, merchandising, credit and finance, advertising, dealer cooperation, packing and shipping, and insurance. Among the speakers will be George P. Auld, Haskins & Sells, New York, formerly accountant-general of the Reparations Commission, who will speak on the "Prospects in Europe"; Norman F. Titus, chief of the transportation division, Bureau of Foreign and Domestic Commerce, Washington, whose subject will be "Fundamentals of an American Merchant Marine"; William Werckenthien, export manager Island Petroleum Co., Baltimore; Lawrence Langner, of Langner, Parry, Card & Langner, New York, and Allen B. Cook, vice-president Guardian Trust Co., Cleveland. James A. Farrell, president United States Steel Corporation

and chairman of the National Foreign Trade Council, will deliver the closing address at the convention, his subject being "Foreign Trade Progress."

Metallurgical Fellowships Open at University of Michigan

Six industrial fellowships in metallurgical engineering and chemical engineering will be open at the University of Michigan, Ann Arbor, Mich., next fall, according to a statement issued by William P. Wood, associate professor of metallurgical engineering. The fellowships pay \$750 a year and carry remission from tuition to courses of advanced study which the holder may elect, supplementing the main investigation assigned him. The announcement also says that holders of a fellowship usually receive an increase in stipend during the second year.

For administrative purposes, the department of metallurgical engineering at University of Michigan is associated with the department of chemical engineering, and is housed in the new East Engineering Building. Twenty rooms, including one double-unit and two single-unit research laboratories, are devoted exclusively to metallurgy, in addition to the general laboratories and those occupied by the teaching staff. Equipment is complete for the production and heat treatment of alloys and their study by metallography and physical testing.

Application for fellowships should be made to the university before April 1. Professor Wood is of the opinion that no one should make application for these fellowships, or indeed consider graduate work, unless his standing as an undergraduate has been in the upper third of his class, and unless he is interested in continuing studies in mathematics and physics.

Further information as to facilities, fellowships and requirements is contained in a bulletin just issued, which may be obtained by writing to the department of metallurgical engineering, East Engineering Building, Ann Arbor, Mich.

COMING MEETINGS

March

Concrete Reinforcing Steel Institute. March 19 to 21. Fourth annual meeting, Edgewater Gulf Hotel, Biloxi, Miss. M. A. Beeman, 2112 Tribune Tower, Chicago, secretary.

American Society for Testing Materials. March 20 to 23. Spring group meetings of committees, Mayflower Hotel, Washington. C. L. Warwick, 1315 Spruce Street, Philadelphia, secretary.

April

American Oil Burner Association. April 3 to 5. Fifth annual convention, Hotel Stevens, Chicago. Leod D. Becker, 350 Madison Avenue, New York, secretary.

American Gear Manufacturers Association. April 19 to 21. Twelfth annual meeting, Hotel Seneca, Rochester, N. Y. T. W. Owen, 3608 Euclid Avenue, Cleveland, secretary.

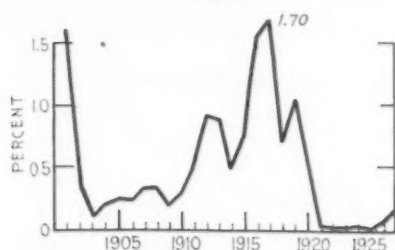
American Society of Mechanical Engineers. April 23, 24. Meeting of materials handling division, Benjamin Franklin Hotel, Philadelphia. Calvin W. Rice, 29 West Thirty-ninth Street, New York, secretary.

National Metal Trades Association. April 25, 26. Annual convention, Hotel Astor, New York. J. E. Nyhan, Peoples Gas Building, Chicago, secretary.

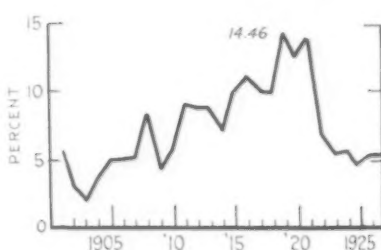
National Foreign Trade Council. April 25 to 27. Fifteenth annual convention, Rice Hotel, Houston, Tex. O. K. Davis, India House, New York, secretary.

American Welding Society. April 25 to 27. Annual meeting, Engineering Societies Building, New York. Miss M. M. Kelly, 33 West Thirty-ninth Street, New York, secretary.

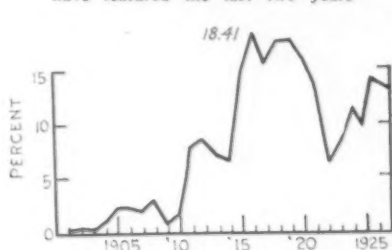
Exports of Pig Iron and Ferroalloys Have Been Well Below $\frac{1}{4}$ Per Cent of Production in the Last Several Years. This is in sharp contrast with some of the years shown in the diagram



Recent Exports of Rolled and Finished Steel Have Averaged Between 5 and 6 Per Cent of Total Production



Tin Plate Exports Since the Beginning of the World War Have Averaged Well Over 10 Per Cent of All the Tin Plate Produced in the United States. Heavy exports have featured the last two years



Changes in Exports and Imports

More Rough Material Going Out and More Finished Material Coming In—Great Increase in Imports of Structural Shapes and Plates

ABOUT 18 months ago THE IRON AGE published two articles dealing with (1) the trend of exports of iron and steel products from the United States and (2) of imports of those products into the country. The export article, "A Quarter-Century of Steel Exports," appeared at page 220 of our issue of July 2, 1926. The import article, "A Quarter-Century of Imports," appeared at page 492 of the Aug. 19 issue. The following paragraphs, together with the tables and diagrams, are designed to bring this story up to date. Figures to the end of 1927 are incorporated.

To avoid repetition of tabular matter, the tables are confined to the last seven years. They are on the same basis as the tables in the preceding articles and show the same things, with the addition of the two later years. Exports of the principal lines of finished products are covered in one table, exports of the principal items of rough material in another in which the total exports and the percentage of finished to total are

shown, and imports of the principal items are given in the third table.

During the seven years under review there has been a fairly progressive decrease in the quantity of steel bars, plates and rails exported. Exports of tin plate have increased heavily, while sheets have shown a moderate gain. Structural material has declined irregularly, as have pipe and tubes. Wire manufactures are at about the level of the opening of the period, but were much higher in some of the intervening years.

Scrap exports have grown greatly. The 1927 total was more than six times that of 1921 and more than twice that of any of the preceding years in the table. Pig iron and ferroalloys made a larger total in 1927 than in any of the preceding years shown. The same is true of castings and forgings. As a result of the above, the total exports of rough material, so called, were more than 50 per cent higher in 1927 than in the largest of the six preceding years. Except for 1926, the

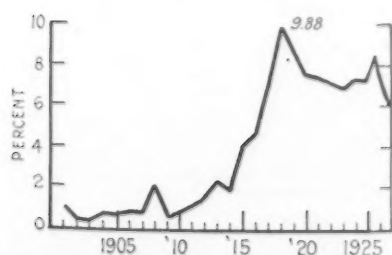
United States Exports of Finished Iron and Steel, in Gross Tons

| | Bars, Steel and Iron | Plates | Sheets, Steel and Iron | Tin Plate | Hoops, Bands, Etc. | Structural Material | Rails and Fastenings | Pipes and Tubes | Wire and Manufactures | Nails, Bolts, Etc. |
|-----------|----------------------|---------|------------------------|-----------|--------------------|---------------------|----------------------|-----------------|-----------------------|--------------------|
| 1921..... | 200,802 | 345,438 | 261,933 | 107,714 | 20,274 | 297,022 | 321,822 | 345,276 | 99,132 | 66,289 |
| 1922..... | 185,253 | 195,135 | 335,930 | 76,633 | 34,512 | 167,585 | 305,166 | 179,239 | 209,668 | 91,698 |
| 1923..... | 173,129 | 222,922 | 268,013 | 124,499 | 38,245 | 199,021 | 295,839 | 193,656 | 191,316 | 84,808 |
| 1924..... | 107,330 | 183,961 | 267,899 | 160,997 | 34,141 | 167,767 | 234,381 | 211,975 | 145,512 | 57,130 |
| 1925..... | 120,254 | 199,647 | 270,469 | 161,383 | 40,933 | 169,250 | 177,193 | 239,670 | 122,044 | 45,886 |
| 1926..... | 147,887 | 138,258 | 373,628 | 250,782 | 46,912 | 239,352 | 229,328 | 287,822 | 98,517 | 32,887 |
| 1927..... | 121,142 | 139,632 | 321,835 | 254,131 | 43,160 | 216,706 | 211,345 | 258,476 | 94,712 | 31,227 |

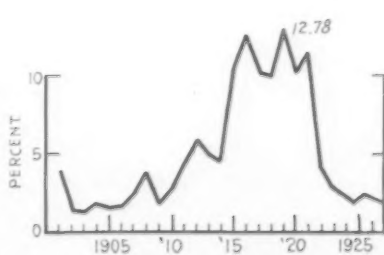
United States Exports of Iron and Steel Products, in Gross Tons

| | Pig Iron and Ferroalloys | Scrap | Ingots and Blooms | Wire Rods | Cast Iron Pipe | Other Castings and Forgings | Total "Rough" Material | Total Rolled and Finished | Total Exports | Percentage Rolled and Finished |
|-----------|--------------------------|---------|-------------------|-----------|----------------|-----------------------------|------------------------|---------------------------|---------------|--------------------------------|
| 1921..... | 28,307 | 37,592 | 10,171 | 18,953 | 48,524 | 615 | 144,162 | 2,065,702 | 2,209,864 | 93.5 |
| 1922..... | 33,005 | 64,784 | 15,687 | 40,424 | 18,071 | 32,943 | 204,914 | 1,780,819 | 1,985,733 | 89.7 |
| 1923..... | 37,427 | 65,980 | 7,352 | 40,868 | 28,065 | 39,031 | 218,723 | 1,791,448 | 2,010,171 | 85.1 |
| 1924..... | 45,423 | 97,748 | 4,835 | 18,762 | 28,771 | 39,345 | 234,884 | 1,571,093 | 1,805,977 | 87.0 |
| 1925..... | 38,170 | 82,573 | 4,271 | 21,203 | 32,193 | 37,423 | 215,843 | 1,546,729 | 1,762,572 | 87.8 |
| 1926..... | 26,001 | 104,738 | 100,956(a) | 19,646 | 34,111 | 36,488 | 321,940 | 1,845,373 | 2,167,313 | 85.1 |
| 1927..... | 52,633 | 238,303 | 98,613 | 16,128 | 27,964 | 54,962 | 488,603 | 1,692,366 | 2,180,969 | 77.6 |

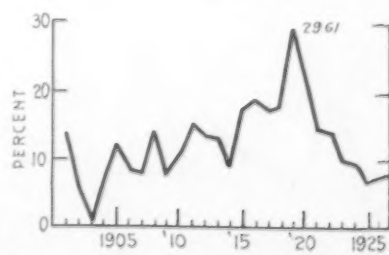
(a) Includes 93,865 tons of skelp.



Since the War, the Exports of Hoops and Bands Have Declined from Nearly 10 Per Cent to 6 Per Cent of Production, But Are Much Higher Than in the Pre-War Period

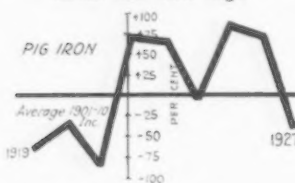


Exports of Steel Bars Made Huge Ton-nages During the War Period, But Now Have Returned to about 2 Per Cent, Simi-lar to 20 Years Ago

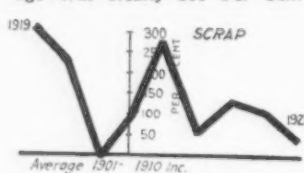


Rail Exports Were Very Heavy After the Armistice. They have dropped, now, how-ever, to about one-quarter of that propor-tion of our output

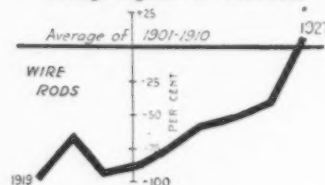
Foreign Pig Iron (Including Ferroalloys) Has Come into the United States in Large Quantities. The diagram traces the movement since the War. In four of the last six years the excess has been high



Scrap Imports Have Been Heavier in Each of the Past Six Years Than the Average of the First Ten Years of the Century, Particularly in 1923, When the Excess Over the Earlier Average Was Nearly 300 Per Cent



Wire Rods Have Been Coming into the United States in Continually Increasing Quantity Since the War. In only 1927, however, did the import tonnage reach as high as the average figures of 1901-1910



1927 total was more than double any of the years immediately before.

Consequently it follows that, although 1927 made the largest total for all iron and steel exports since 1921, it was exceeded by three of the five immediately preceding years in exports of rolled and finished material. Only in two years of the seven were the rolled and finished exports lower than in 1927.

Export diagrams for six particular products show the percentage between the amount exported and the total amount produced. These figures vary markedly over a period of 27 years of the study. Pig iron and ferroalloys reached almost 2 per cent in the early days of the war, but in the last two years have been less than one-sixth of 1 per cent. Rolled and finished steel as a

whole approached 15 per cent near the end of the war, but in the last few years has hovered around 5 per cent. Tin plate exports exceeded 18 per cent early in the war and averaged about 14 per cent in 1926 and 1927. Hoops and bands, which were close to 10 per cent at the close of the war, are now down around 6 per cent. Steel bars, after approaching 13 per cent in 1919, are only slightly above 2 per cent. Rails reached almost 30 per cent in 1919 and lately have been between 7 and 8 per cent.

Pig Iron Imports Decline, Finished Steel Imports Gain

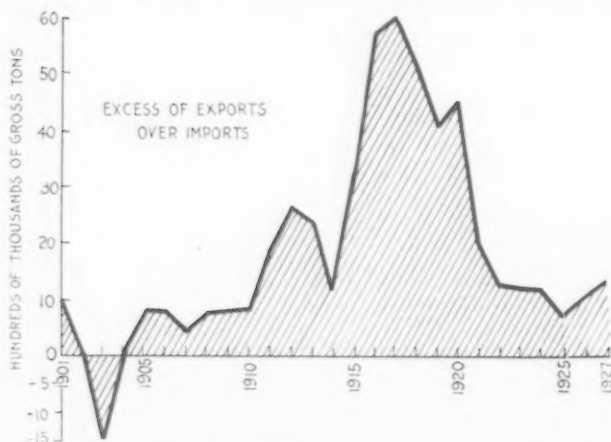
Pig iron has come into the country in very large quantities in four of the seven years under survey. In 1922, 1923, 1925 and 1926 the average was more than 495,000 tons a year. Last year, however, imports of

United States Imports of Iron and Steel Products, in Gross Tons

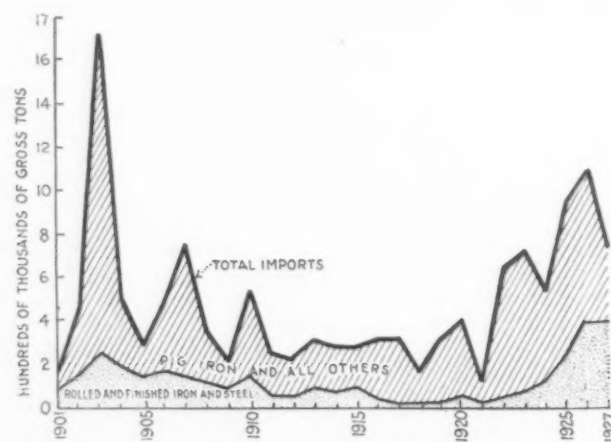
| | Pig Iron and Ferroalloys | Scrap | Ingots, Blooms and Bars | Wire Rods | Plates, Sheets, Hoops, Etc. | Tin Plate | Structural Shapes | Rails | Iron Bars | Total* | Per Cent Rolled and Finished |
|-----------|--------------------------|---------|-------------------------|-----------|-----------------------------|-----------|-------------------|--------|-----------|-----------|------------------------------|
| 1921..... | 44,036 | 41,469 | 10,024 | 917 | 1,976 | 455 | 777 | 22,048 | 1,913 | 123,615 | 28.4 |
| 1922..... | 492,595 | 82,854 | 27,720 | 1,726 | 1,947 | 2,682 | 7,823 | 26,629 | 8,092 | 654,606 | 10.6 |
| 1923..... | 468,083 | 162,068 | 22,671 | 3,948 | 4,572 | 10,037 | 10,674 | 29,706 | 7,754 | 734,674 | 12.3 |
| 1924..... | 268,911 | 66,841 | 39,024 | 6,851 | 6,064 | 1,036 | 43,245 | 43,358 | 4,325 | 556,621 | 28.6 |
| 1925..... | 521,449 | 99,815 | 86,686 | 7,989 | 15,309 | 383 | 77,293 | 38,669 | 11,738 | 957,451 | 26.6 |
| 1926..... | 502,830 | 86,725 | 134,646 | 10,074 | 44,024 | 2,160 | 121,099 | 62,776 | 5,623 | 1,110,049 | 36.3 |
| 1927..... | 175,279 | 60,203 | 105,290 | 17,990 | 53,612 | 5,665 | 161,848 | 16,145 | 4,220 | 750,467 | 53.1 |

*Including items not separately shown. Cast iron pipe is the largest, with 46,900 tons in 1924; 50,939 tons in 1925; 83,873 tons in 1926, and 81,769 tons in 1927. Other pipe and tubes accounted for 7573 tons in 1924; 25,869 tons in 1925; 31,073 tons in 1926, and 50,088 tons in 1927.

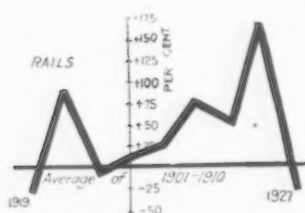
†Estimating 70 per cent in 1921 to 1924 for steel bars included with ingots and blooms.



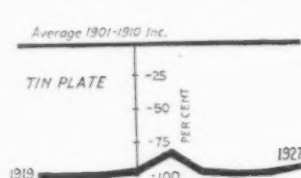
Only in One Year of the Last Quarter Century Have Imports of Iron and Steel Exceeded Exports. That was in 1903. In only one other year of that period—1926—have imports reached 1,000,000 tons. The excess of exports annually, as shown in the diagram, reached a peak in the early years of the War, at about 6,000,000 tons



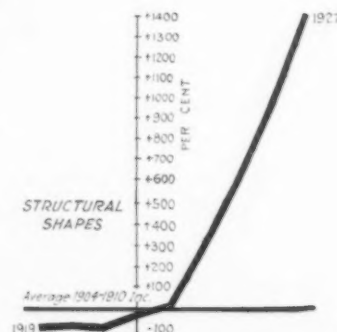
Rolled and Finished Iron and Steel, While Accounting for Only One-Quarter of All the Incoming Tonnage in the Last Quarter Century, Have Been Increasing Heavily in the Past Few Years. They reached a higher level in 1926 and 1927 than at any previous time covered in the diagram (upper right)



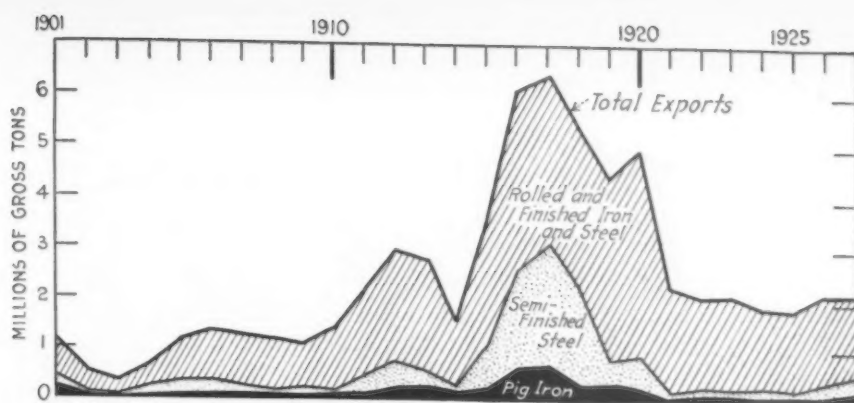
Rail Imports Since the War Culminated in 1926 in More Than 62,000 Tons. The incoming tonnage dropped last year to a figure lower than the average of 1901-10



Tin Plate Imports, While Slightly Fluctuating, Are No Longer of the Importance of 25 Years Ago. In place of an average of 62,000 tons a year, the average of the past seven years stands little more than 3000 tons



Imports of Structural Shapes Have Increased Greatly Over the 1904-1910 Average. Last year they were more than 14 times as heavy as in the early years of the century, while in 1926 the excess was nearly 1000 per cent



Exports of Rolled and Finished Steel and Iron Continue at Nearly Double the 1901-1910 Level (Left). The semi-finished steel tonnage sent abroad has dropped sharply since the War, while some of the rough materials, including pig iron and scrap, have made recent gains

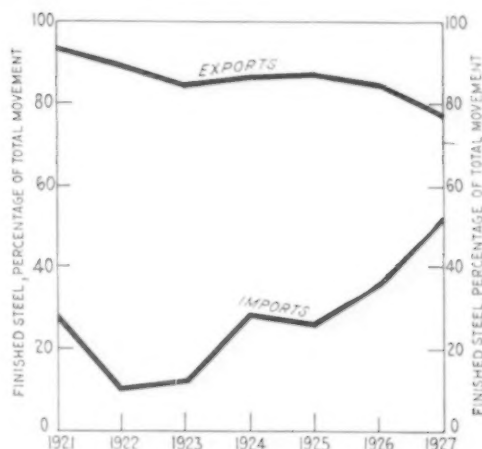
Our Exports Have Been Gaining Mainly in the Rougher Categories, While Imports of Finished Steel Have Made Larger and Larger Percentages of the Incoming Tonnes

pig iron dropped to 175,000 tons, or about one-third of the incoming movement of the two preceding years. This loss of more than 300,000 tons from 1926 accounts for almost all of the drop in total iron and steel imports between the two years.

What is of particular importance in many respects is the fact that in the last two years the amount of finished iron and steel products coming in has been much higher than in many years past. In each of the last two years it has been between 390,000 and 400,000 tons, and in 1927 was more than 53 per cent of the total incoming movement.

Most prominent in the increase has been the large amount of structural shapes coming in. The import total shows a steady and rapid increase from less than 1000 tons in 1921 to more than 160,000 tons in 1927. Each year has shown a large gain over the preceding year and each of the two last years has shown a gain in excess of 40,000 tons.

Plates, shapes and hoops, considered as one group, show a steady and rapid increase since 1922, when the incoming tonnage was less than 2000. During the past two years it has averaged nearly 49,000 tons, which is more than three times the highest of the preceding year's total. Imports of wire rods likewise have shown a steady, though less spectacular, gain. From less than 1000 tons in 1921, the quantity has risen to about 18,000 tons in 1927.



One diagram shows the relation between the finished products and the total movement, both for exports and for imports. It shows an almost continuous rise in the import ratio from 1922 through 1927, and a steadily downward trend in the export ratio. In fact, in 1927 imports at more than 53 per cent of the total have approached the export ratio of 77.6 per cent. As a comparison, finished products in 1922 constituted only 10.6 per cent of imports and about 90 per cent of exports.

Increase in Shipments of Sheet-Metal Ware

Shipments of enameled sheet-metal ware in January, as reported to the Department of Commerce by 18 manufacturers, comprising approximately 80 per cent of the industry, totaled 319,218 dozens, valued at \$1,091,350. This compares with 307,280 dozens, valued at \$1,085,762, in December. The enameled ware included in the reports consists of cooking, household and hospital utensils having a vitreous coat on a sheet steel or iron base.

January shipments of galvanized sheet-metal ware, as reported by 15 concerns comprising a large proportion of the industry, were 184,993 dozens, valued at \$691,348. This compares with 107,267 dozens, valued at \$398,199 in December, and with 173,899 dozens, valued at \$676,768, in January, 1927.

Statistical Abstract of the United States—1926

Following a series of 48 predecessors the Statistical Abstract of the United States for 1926 has been issued by the Department of Commerce. It consists of a book of 831 pages, and copies may be obtained at \$1 each from the superintendent of documents, Government Printing Office, Washington. As in previous editions, it consists of a compendium of information covering many features of the progress of the United States along material lines.

It is divided into a series of general topics: Area and population, vital statistics, immigration and emigration, education, public lands and national parks, climate, army, navy, etc., national Government finance,

State, city and local Government finance, money and banking, wealth, business finance, prices, wages, postal service, telephone, telegraph and cable, electric light and power, public roads and automobiles, steam and electric railroads and express companies, waterways and water-borne commerce, foreign commerce, irrigation and drainage, farms and their products, including crops and animals, forests, fisheries, mining and mineral products, and manufactures. All of these are reported in tabular form and in great profusion of detail.

Highest February Building Construction Ever Recorded

Building and engineering contracts in February in 37 States, east of the Rocky Mountains, are reported by F. W. Dodge Corporation at \$465,331,000. This is the highest February total ever achieved. It represents a gain of 18 per cent over last year and is 9 per cent more than the preceding month. The area accounts for about 91 per cent of the total construction volume of the United States.

Four districts made new high records for February, these being New York and northern New Jersey, the Middle Atlantic States, the Central West and the Texas district. In New England the total was the second highest for February. More than half of the total was for residential buildings, these aggregating \$238,985,000. Public works and utilities provided \$59,980,000; commercial buildings, \$57,695,000; social and recreational buildings, \$35,414,000; and industrial buildings, \$34,881,000.

For the first two months of this year contracts have been awarded to the extent of \$892,500,000. This is 15 per cent ahead of the same two months last year.

Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Statistical Data Concerning the Chief Consuming Industries Indicate That:

Expansion of activity in chief consuming industries is at hand, but demand is not insistent.

Car and locomotive buying in February picked up from the unusually low January level.

Automobile production is clearly expanding, but severe competition is apparent.

Building volume continues large; residential building assures good demand for pipe and nails; structural sales are improving.

Outlook for tank plates in petroleum States may improve, as storage of oil is becoming a problem.

Iron and steel exports have been only moderately active.

ALL barometers indicate an increased demand for steel. In view of this fact it seems noteworthy that the demand is not urgent or keen. A large quantity of sheets and bars is obviously required by automobile manufacturers, and structural steel orders continue in good volume as building activity expands. But in almost every direction one notes a lack of snap and spontaneity, while close attention is paid to prices. This is far from suggesting the development of anything approaching boom conditions or a sustained advance in iron and steel prices. The condition is due to the obvious fact that iron and steel consumers are proceeding cautiously. Their volume of business is large in quantity and has picked up sharply, but competition is severe in many lines and the outlook for further expansion becomes more uncertain with each month of increased production. On the average, profits are not satisfactory.

The net conclusion appears to be that the volume of steel business will increase somewhat further and will be well sustained during the first half of the year. In fact, steel production has not yet responded fully to the influence of conditions reflected in the rising P-V line.

But it seems probable that the volume of business will not be done on a very profitable basis.

Large Potential Demand Indicated

OUR composite demand line rose sharply in January, to a point nearly as high as that reached in February, 1927. This means that the activity of the chief iron and steel consuming industries was such as to indicate a large potential demand. Assuming operations in these industries to be profitable, their activity would sooner or later result in a proportionate increase in the buying of iron and steel and justify a similar increase in the steel output.

The composite demand index is estimated at 114 in January, against 101 in December, and 112 in January, 1927. This rise of 13 per cent in a month is the sharpest on our record and appears to justify completely the similar rise in the steel ingot output—the volume of which we were inclined to doubt a month ago. The chief factors in the rise were increased activities in the automobile, building and general manufacturing lines of industry. There were gains also in mining, machine tool orders, and exports of iron and steel. Strangely enough, the only factor in the composite demand index

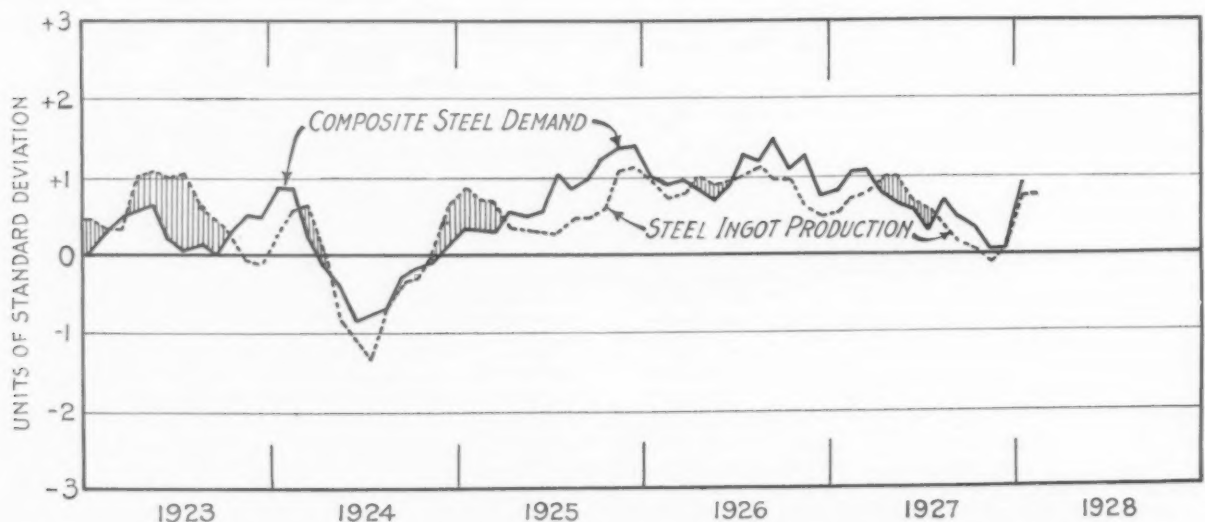


Fig. 1—Steel Production Carried Forward in February the High Level of January—the Sharpest Advance in Nearly Five Years. But the curve of composite demand rose still higher. The outlook for the immediate future is encouraging

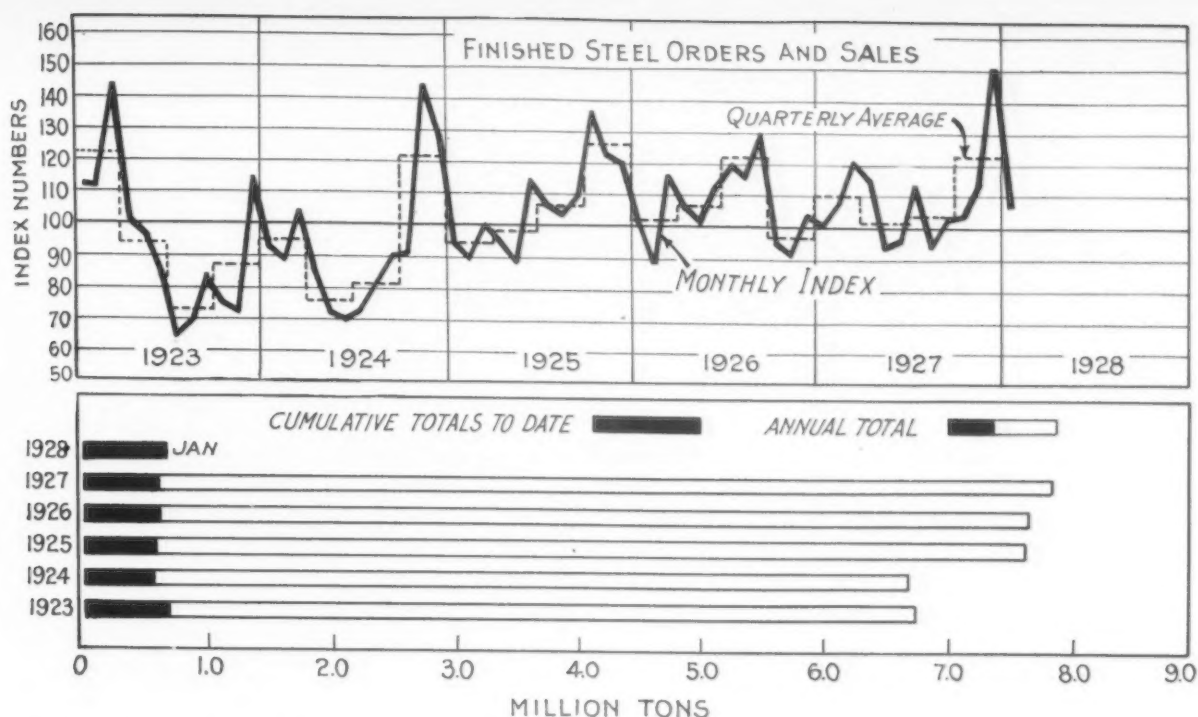


Fig. 2—Buying of Finished Steel Dropped Sharply After the Great Spurt in December, But Constituted the Highest January Since 1923. The peak of resultant production may follow in February or March

which declined in January was farm purchasing power, which was affected by the small marketings of the chief farm products and by somewhat lower farm prices.

Preliminary February data indicate a further sharp gain in the composite demand line. Allowing for seasonal variation, automobile production, building activity and railroad traffic were all considerably higher in that month. If we assume that this activity in the consuming industries means a proportional need of steel, it may therefore be said that the present level of steel output is conservative. But it must also be said that the price situation shows that the intensity of the demand, as measured in dollars, is not so great as the volume of demand measured in tons.

As shown in the chart, the average daily output of steel ingots, adjusted to eliminate the merely seasonal movements, held practically level in February at about the same figure that obtained in March last year.

Conditions in Certain Industries

As to the future, most indications favor the conclusion that further expansion of industrial activity is to be expected and that the output of steel will increase also. Railroad freight traffic was on the up-grade in February, making due allowance for seasonal conditions. The increase in basic industries, including building, automobile production and steel, indicates a more than seasonal gain this spring. The condition of railroad equipment also seems to indicate some increase in requirements for cars and locomotives. (This matter is touched upon again later.)

Building activity promises to continue in large volume. Easy money and a good investment demand are reassuring factors. Considering the season, building permits have steadily increased. This should mean a gain in residential construction sufficient to insure a better demand for nails, standard pipe and other similar items. Moreover, construction contracts as a whole increased sharply in February, which fact promises a continuation of the good demand for structural steel.

Manufacturing activity in general (excluding the iron and steel and automobile industries) has not increased in proportion to the large gains in a few of the more basic industries. But, even so, there has been a recovery that is sufficient to bring the general level higher than it has been since last fall. In this connection it is significant to note that the movement of machine tool orders has been upward for four months and that, considering the season, the volume of such orders in January was the largest since September, 1926.

Moreover, current reports indicate continued good business in this line.

Automobile Industry Expanding Seasonally

The upward trend of automobile production carried through February, when, preliminary estimates indicate, approximately 350,000 cars and trucks were turned out. There seems every reason to anticipate a further increase that will last through April, and a proportionally large volume of business in sheets, bars and other automobile raw material. Every indication of severe competition, however, is apparent in this industry, and the tendency toward price cutting appears to mean that the profits in the industry will not be in proportion to the volume of business done.

Mining industries, including petroleum, have shown little change and are not likely to expand much during the next few months. The level here has been running along about steady at the general average of the last seven years. The coal business is poor, with no turn yet in prospect. The chief opportunity for improvement lies in the oil industry, although even here the huge stocks of crude oil now in storage constitute a problem. Current petroleum production, however, is not excessive and drilling activity is at a low level. The industry is dragging bottom, with improvement only a question of time.

As to agriculture, we do not find the immediate outlook for farmers as good as it seemed at the end of 1927. Average farm prices have declined and the purchasing power of the farm dollar is not quite so high. Also, the number of dollars received by farmers has been reduced by the relatively small quantity of the chief crops and animals marketed.

Seasonal Decline in Orders

AS usual, the orders for finished steel declined in January. Owing to the extraordinary peak attained by such orders in December, the decline was larger in amount than usual; but, even so, the January volume of finished steel orders, covering items that represent roughly 50 per cent of the steel business, was the largest for that month since 1923. Ordinarily the short month of February shows a decrease in such orders, 1927 furnishing the only recent expansion. This year, owing to the extra day in February and to the unusually sharp expansion in the automobile and building industries, it seems probable that little, if any, decline is to be expected in the orders. Thus 1928 is off to a good start.

The best showing made in the January figures is

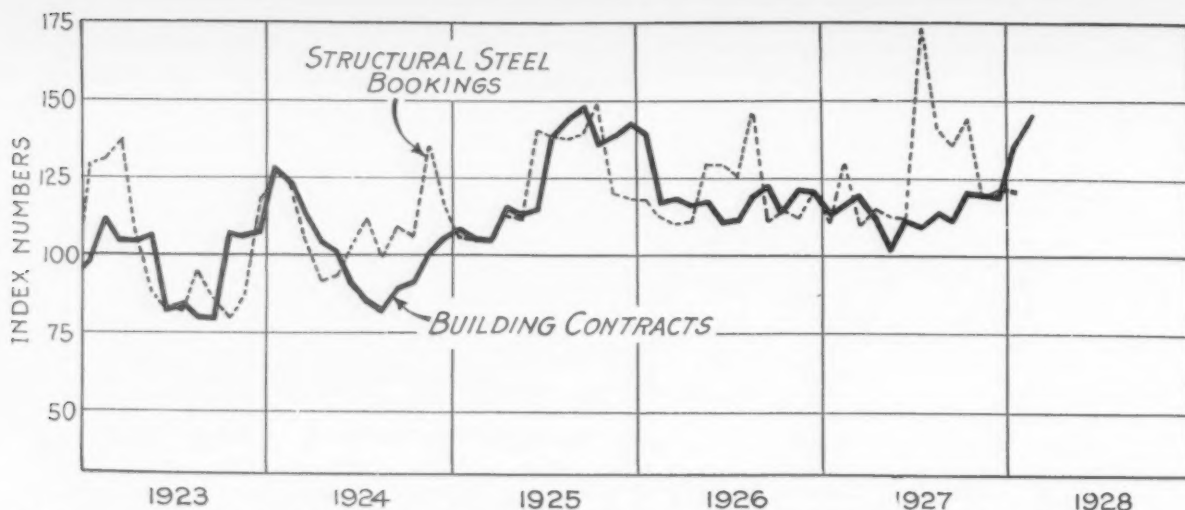


Fig. 3—Building Contracts Continued Upward in February. Structural steel bookings, after dropping in December, have remained above the seasonal average. The outlook is encouraging for the next few months

found in sheets and in fabricated structural steel. The January volume of independent sheet sales amounted to 302,900 tons, far exceeding the business in any previous January on our record. It compares with 261,400 tons in 1927 and 253,300 tons in 1926. Structural steel sales amounted to 213,800 tons, which is the largest January volume since 1924. The business in fabricated plates was about average for January, though somewhat below a year ago.

The poorest showing was made by steel castings, of which item only 90,900 tons is reported as ordered, against 107,800 tons in 1927 and 112,000 tons in January, 1926. The decrease in the orders for castings between December and January, however, was almost exactly the usual seasonal amount, so that no downward trend was indicated. The orders for castings seem to furnish an excellent index of general business conditions, and the low levels of recent months fairly represent the average situation. But the three months from November to January, inclusive, show a considerable recovery, which gives a favorable impression as to the recent trend, and the orders were above production in all three months.

Structural Steel Orders Above Average

OUR third chart has been revised in an attempt to allow for seasonal variation in the orders for structural steel. A seasonal factor exists, the peak of the orders usually coming in April and being about 13 per cent above the monthly average for the year, while the low point usually occurs in August or September, and is about 4 per cent under the average. Although the seasonal variation is most irregular and the number of years available for determining it is too small for

satisfactory results, it is believed that the adjusted curve gives a truer picture of the actual trend than would be presented by the actual figures.

The chart shows an extraordinarily high peak in July last year, since when the trend has been irregularly downward. But it may be said that December and January showed a sidewise movement, the bookings of structural steel being sustained at a level well above the average. The situation resembles that found at the turn of the year between 1925 and 1926, an analogy which is encouraging. Moreover, in January the level was well below that of the building activity curve.

After rising sharply in January, the adjusted curve of building activity (floor space in contracts awarded) continued upward in February, and nearly reached the record peak made in September, 1925. This is one of the most favorable indications as to business in general, and the iron and steel industry in particular, that has yet appeared. Perhaps the extra day in February helped make this showing, but even the average daily volume of building contracts would show a substantial gain. The index is now 155, against 142 in January and 124 a year ago, the average for the seven years 1921-1927 being taken as 100. More than this, both building permits and contemplated new construction gained more than usual in February. Thus all phases of building present favorable indications and strongly suggest a continued large volume in this basic industry throughout the spring.

Better Equipment Orders

WHILE the volume of railroad equipment orders also picked up in February, some allowance must be made for the extra day, due to the fact that 1928 is

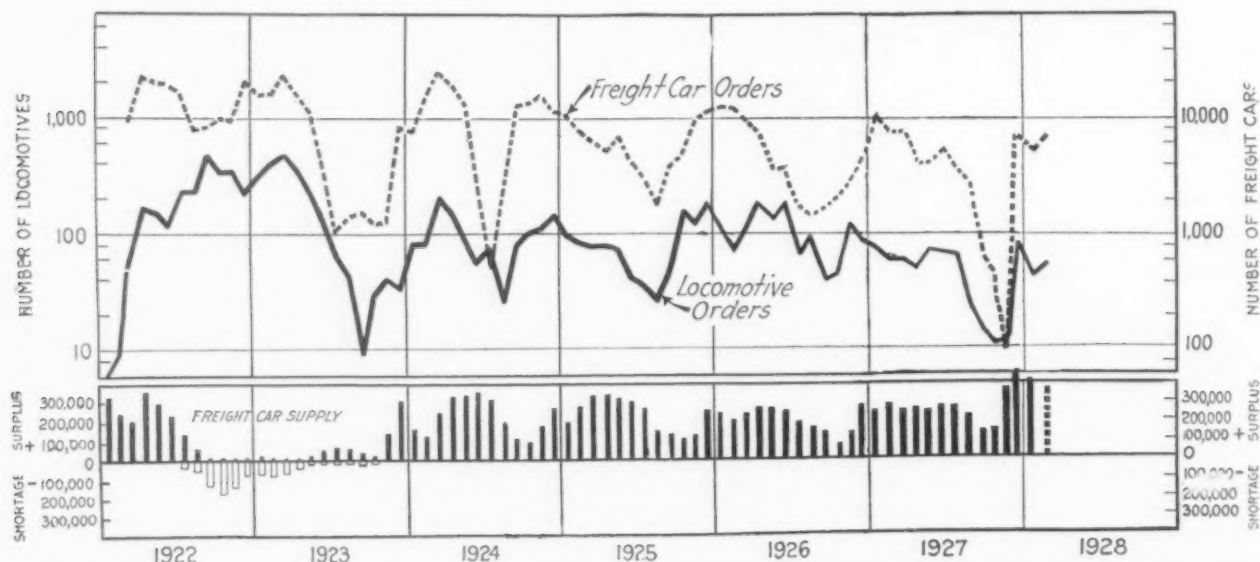


Fig. 4—Locomotive and Railroad Car Orders Have Recovered from the Low January Levels. But the large surplus of cars does not indicate need for heavy purchases

leap year. According to *Railway Age*, domestic freight car orders in February numbered 5876, an increase over January and, except for December last year, the largest since June, 1927. This figure may be called fairly good, but the fact remains that the first two months of 1928 saw the smallest volume of freight car orders for the period that has existed in any recent year. It must be remembered also that the surplus of freight cars is large. Nevertheless, freight traffic is gaining gradually, considering the season, and the outlook appears to be fair. The locomotive orders, too, showed a gain over January, the domestic business amounting to 30 units. This compares unfavorably, however, with domestic

orders for 85 locomotives in February last year.

On the whole, it looks very much as if the equipment business touched bottom last November, and it does not seem too optimistic to conclude that, with the gradual improvement in railroad traffic that is indicated, it will expand this spring. In reaching this conclusion, however, one must allow for the existence of a considerable surplus of equipment and for the fact that railroad earnings are small, on the average. The latter fact makes it probable that the carriers will endeavor to use the more obsolete types of equipment, and that for a time they will not order new equipment in proportion to the growth of their traffic.

Steel Corporation's Unfilled Orders Increase Again in February

A moderate increase in the unfilled orders of the United States Steel Corporation was reported for February. The total on Feb. 29 was 4,398,189 tons, a gain of 122,242 tons over the 4,275,947 tons on Jan. 31. The increase in January over December was 303,073 tons. The February gain was the fifth in succession. A year ago the unfilled orders were 3,597,119 tons. The February total this year was the largest since February, 1926. The following table gives the unfilled tonnage by months, commencing with January, 1926:

| | 1928 | 1927 | 1926 |
|---------------|-----------|-----------|-----------|
| Jan. 31..... | 4,275,947 | 3,800,177 | 4,882,739 |
| Feb. 28..... | 4,398,189 | 3,597,119 | 4,616,822 |
| Mar. 31..... | | 3,553,140 | 4,379,935 |
| April 30..... | | 3,456,132 | 3,867,976 |
| May 31..... | | 3,050,941 | 3,649,250 |
| June 30..... | | 3,053,246 | 3,478,642 |
| July 31..... | | 3,142,014 | 3,602,522 |
| Aug. 31..... | | 3,196,037 | 3,542,335 |
| Sept. 30..... | | 3,148,114 | 3,593,509 |
| Oct. 31..... | | 3,341,040 | 3,683,661 |
| Nov. 30..... | | 3,454,444 | 3,807,447 |
| Dec. 31..... | | 3,972,874 | 3,960,969 |

The high record in unfilled orders was 12,183,093 tons at the close of April, 1917. The lowest was 2,674,757 tons on Dec. 31, 1910.

Increase in Finished Iron and Steel Imported into India

Imports of all classes of iron and steel at the port of Karachi, India, in 1927 totaled 84,645 tons, against 73,333 tons in 1926, according to a report received by the iron and steel division, Department of Commerce, from E. Verne Richardson, consul at Karachi. The gain was the result of enlarged receipts of bars, 15,144 tons, against 8928 tons in 1926; of rods, 7490 tons, against 6608 tons; of galvanized sheets, 10,639 tons, against 5946 tons; and of miscellaneous iron and steel, 36,503 tons, against 30,783 tons. These were offset, however, in some measure by reduced imports of sheets and plates, 10,709 tons, against 12,049 tons; and of hoops, 4160 tons, against 9019 tons.

Report on Migration of Industry Nears Completion

WASHINGTON, March 13.—As a basis for determining the mobility of industry, data from more than 700 cities and towns in the United States designed to show the main currents for 1927 are being compiled by the organization service of the Chamber of Commerce of the United States. The report, nearing completion, will indicate geographically the establishment of new or primary industrial plants, the establishment of branches and the relocation of plants. It will indicate whether or not industry is shifting from large to smaller cities

and towns. It is recognized, the organization service says, that industry is readjusting itself to new conditions, but no measure of the extent of this readjustment has been available.

"The scramble for industries on the part of many cities has been largely a free-for-all struggle with no knowledge of where the industry was coming from or why it was moving or whether one city's gain was to be another city's loss," it is pointed out. "The purpose of the present survey is to provide a basis for orderly economic and industrial development.

"Tabulated returns show, for example, an apparently unusual activity in Texas, where the establishment of 45 plants is reported, 35 of them being primary plants. But Ohio, an old industrial State, discloses a similar degree of adjustment."

New Alloy Steel Bar Schedule With Common Base Price Announced

A new schedule of alloy steel bar prices, based upon producing costs of the leading manufacturers, has been announced, and it shows slight advances in most grades and substantial declines in a few. All grades now take a common base price of \$2.65 per 100 lb., mill, which, it is said, measures the increase in producing costs over carbon steel bars at \$1.90 per 100 lb. In other words, the producing cost of alloy steel bar practice runs \$15 a ton higher than that in ordinary carbon bar practice. To the base price is added a charge in keeping with the alloy content and what the study of the costs of the several manufacturers in this connection disclosed. The new and old schedules make the following comparison:

| S.A.E. Series Numbers | Extra per 100 Lb. Over Base | New Price | Old Price |
|---|-----------------------------|-----------|------------------|
| 2000 (1/4% nickel) | \$0.25 | \$2.90 | ..... |
| 2100 (1 1/2% nickel) | 0.55 | 3.20 | ..... |
| 2300 (3 1/2% nickel) | 1.50 | 4.15 | \$4.00 to \$4.10 |
| 2500 (5% nickel) | 2.25 | 4.90 | 5.00 to 5.25 |
| 3100 (nickel chromium) .. | 0.55 | 3.20 | 3.00 to 3.10 |
| 3200 (nickel chromium) .. | 1.00 | 3.65 | 4.75 to 5.00 |
| 3400 (nickel chromium) .. | 3.20 | 5.85 | 6.00 to 6.25 |
| 3300 (nickel chromium) .. | 3.80 | 6.45 | 6.75 to 7.00 |
| 4100 (chromium molybdenum, 0.25 to 0.40% molyb.) .. | 0.70 | 3.35 | ..... |
| 4100 (chromium molybdenum, 0.15 to 0.25% molyb.) .. | 0.50 | 3.15 | ..... |
| 4600 (0.20 to 0.30% molyb., 1 1/2% nickel) | 1.05 | 3.70 | ..... |
| 5100 (low carbon, 0.60 to 0.90% chrom.) .. | 0.35 | 3.00 | ..... |
| 5100 (forging, 0.80 to 1.10% chrom.) .. | 0.45 | 3.10 | ..... |
| 5100 (chromium spring) .. | 0.20 | 2.85 | 3.00 to 3.10 |
| 6100 (forging bars, chromium vanadium) | 1.20 | 3.85 | 4.00 to 4.15 |
| 6100 (spring steel, chromium vanadium) | 0.95 | 3.60 | 3.50 to 3.75 |
| Nickel chromium vanadium | 1.50 | 4.15 | 4.05 to 4.20 |
| Carbon vanadium | 0.95 | 3.60 | 4.10 to 4.20 |
| 9250 (sil. mang. spring steel) | 0.25 | 2.90 | 3.00 to 3.15 |

Schedule of the next installments of the *Business Analysis and Forecast*, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: **March 22—Position of Iron and Steel Producers; March 29—General Business Outlook; April 12—Activity in Steel Consuming Industries.**

SMALLER ORE SHIPMENTS

Lake Superior Ranges Show Drop of 12.7 Per Cent from 1926 Movement

IRON ore shipments from Lake Superior district in 1927, as compiled by *Iron Trade Review*, amounted to 52,343,336 gross tons. This is a decline of more than 7,600,000 tons from the 1926 shipments, which totaled 59,972,038 tons, and is the smallest movement since 1924. Of the total, 51,107,136 tons was shipped by steamer and 1,236,200 tons by rail. Both methods of shipment participated in the decline, that by lake having dropped 12.7 per cent and that by rail 13.8 per cent.

As has been the case for many years, the lead was taken by the Oliver Iron Mining Co. (United States Steel Corporation subsidiary), which shipped 21,511,525 tons, or 41.10 per cent of the total. This was a reduction of 4,541,733 tons from the company's 1926 shipments, which aggregated 43.43 per cent of the total. Thus the Oliver tonnage decrease was approximately 60 per cent of the total tonnage decrease. The Oliver company has shipped 434,585,575 tons since 1908. In comparison with this all the ranges have shipped, since their several beginnings, 1,346,264,975 tons.

Six other operators shipped more than 1,000,000 tons each in 1927. Their aggregate was 23,299,720 tons. Adding this to the Oliver shipments, a total of 44,811,245 tons was shipped by seven companies, amounting to 85.6 per cent of all the ore. The remaining 14.4 per cent was shipped by a small group of independent companies.

All the ranges showed a decline in shipments from 1926. These declines varied from nearly 30 per cent of the small shipments from Mayville-Baraboo to less than 7 per cent from the Marquette range, less than 5 per cent from the Cuyuna range and less than 3 per cent from the Vermilion range.

In spite of the smaller shipments from all ranges there were 86 mines active on the Mesabi range in 1927, compared with 79 in 1926 and 87 in 1925. As a result the average production per mine declined considerably. It was 383,420 tons in 1927, compared with 479,111 tons in 1926. This range provided 63.0 per cent of the total tonnage, against 63.8 per cent in 1926.

Active mines in the other districts showed 34 for Menominee against 32 in 1926; 26 in Marquette against 22; 20 in Gogebic, the same as in 1926; 13 in Cuyuna against 15; five in Vermilion, as in 1926, and one in Mayville-Baraboo, as in 1926. The total for the seven ranges was 185 active mines, compared with 174 in 1926 and 186 in 1925. The average mine shipment for all ranges in 1927 was 282,922 tons, which is considerably lower than in the two preceding years. In 1926 the average was 344,737 tons, while in 1925 it was 298,475 tons.

Ore benefited before shipment made up nearly three-eighths of the total tonnage. The amount in 1927

was 19,266,850 tons, or 37 per cent of the total, the same proportion as in 1926. Of this, the quantity crushed in 1927 was 14,124,960 tons; washed ore was 4,766,997 tons; dried ore, 190,543 tons; sintered, nodulized and briquetted, 107,950 tons; jigged ore, 76,400 tons. All of these figures showed declines from 1926.

Nearly 6,000,000 Tons of Iron and Steel in Water-Borne Commerce

WASHINGTON, March 10.—Of the total of 531,614,691 net tons of freight, exclusive of lighterage, which constituted the 1926 water-borne commerce reported by the Bureau of the Census for continental United States and Alaska, domestic transportation made up 405,210,902 tons, or 76.2 per cent, and foreign commerce consisted of 126,403,861 tons. Of the foreign commerce, 76,324,861 tons was exports and 50,078,928 tons was imports. While, of course, all the domestic commerce was carried in American vessels, only a little more than one-third, 33.9 per cent, of the foreign commerce was carried in American vessels.

Unmanufactured iron and steel constituted 5,847,145 tons of the total water-borne transportation, 3,035,500 tons being in domestic commerce and 2,811,645 tons in foreign commerce. Foreign vessels carried 1,613,678 tons and American vessels 1,197,967 tons, or 42.6 per cent, of the foreign commerce. The total water-borne iron ore transportation was 69,514,069 tons, of which 64,581,613 tons was in domestic commerce and 3,932,456 tons in foreign commerce. Of the latter total, 2,303,719 tons was carried in foreign vessels and 1,628,737 tons, or 41.4 per cent, in United States ships.

The active fleet of continental United States in 1926 numbered 37,561 vessels, with a gross tonnage of 18,415,893, as against 40,383 vessels of 12,371,269 gross tons in 1916.

Danger of Extinction of Merchant Marine Is Emphasized

WASHINGTON, March 11.—The unsatisfactory condition of the United States merchant marine was recently emphasized before the House Committee on Merchant Marine and Fisheries by H. G. Smith, vice-president of the National Council of American Shipbuilders, in the course of testimony in connection with the White and Wood bills. The measures are designed to establish a privately owned and operated merchant marine by means of assistance in the form of construction loans and mail and naval subventions. Mr. Smith told the committee that the American shipbuilding industry is now in a far more unsatisfactory condition than it was before the World War and is threatened with extinction if a merchant marine is not developed through government assistance.

TABLE I.—SHIPMENTS BY PORTS AND ALL-RAIL

| | 1927 | 1926 | 1925 | 1924 | 1923 | 1922 |
|---------------------|------------|------------|------------|------------|------------|------------|
| Escanaba | 5,865,224 | 6,599,597 | 5,644,278 | 4,244,669 | 5,607,411 | 4,592,354 |
| Marquette | 3,238,855 | 3,417,462 | 3,487,968 | 2,516,548 | 2,789,285 | 1,976,220 |
| Ashland | 6,239,774 | 7,139,865 | 6,664,501 | 4,807,565 | 6,237,449 | 5,813,207 |
| Two Harbors | 5,703,159 | 6,266,272 | 6,016,096 | 4,817,494 | 6,418,464 | 5,952,437 |
| Superior | 14,627,936 | 16,476,264 | 14,560,477 | 13,355,214 | 17,820,476 | 11,234,240 |
| Duluth | 15,432,188 | 18,638,395 | 17,707,978 | 12,882,082 | 20,163,619 | 13,044,771 |
| Total by lake | 51,107,136 | 58,537,855 | 54,081,298 | 42,623,572 | 59,036,704 | 42,613,229 |
| Total by rail | 1,236,200 | 1,434,183 | 1,435,046 | 1,271,538 | 1,743,299 | 1,376,867 |
| Total | 52,343,336 | 59,972,038 | 55,516,344 | 43,895,110 | 60,780,003 | 43,990,096 |

TABLE II.—IRON ORE SHIPMENTS BY RANGES

| | 1927 | 1926 | 1925 | 1924 | 1923 | 1922 |
|------------------------|------------|------------|------------|------------|------------|------------|
| Mesabi | 32,974,157 | 38,249,793 | 35,889,988 | 29,141,665 | 41,814,463 | 28,055,394 |
| Marquette | 4,151,868 | 4,442,765 | 4,185,533 | 3,174,660 | 3,892,666 | 2,817,390 |
| Menominee | 5,211,215 | 5,945,811 | 5,268,846 | 3,836,707 | 4,854,781 | 4,078,519 |
| Gogebic | 6,383,408 | 7,536,389 | 7,068,296 | 5,159,838 | 6,579,950 | 6,218,610 |
| Vermilion | 1,547,732 | 1,586,054 | 1,437,577 | 978,097 | 1,278,598 | 1,211,467 |
| Cuyuna | 1,982,302 | 2,079,276 | 1,509,217 | 1,468,940 | 2,220,745 | 1,497,615 |
| Mayville-Baraboo | 92,654 | 131,950 | 156,887 | 135,203 | 138,800 | 110,101 |
| Total | 52,343,336 | 59,972,038 | 55,516,344 | 43,895,110 | 60,780,003 | 43,990,096 |

YOUNGSTOWN-INLAND MERGER

Negotiations Have Been Dropped—Sheet & Tube Company to Expand in Chicago District

YOUNGSTOWN, March 13.—Merger negotiations between the Youngstown Sheet & Tube Co., Youngstown, and the Inland Steel Co., Chicago, which were first made public late in December, have been dropped on account of disagreement on certain features of the consolidation. An official statement issued on March 8 follows:

"J. A. Campbell, president of the Youngstown Sheet & Tube Co., and L. E. Block, chairman of the board of the Inland Steel Co., announced today that the parties have been unable to agree on certain important features of the proposed merger of the two companies and that the merger therefore will be abandoned."

The Youngstown-Inland merger would have brought together steel ingot capacities amounting approximately to 5,000,000 tons, exceeded only by the Steel Corporation and the Bethlehem Steel Corporation. It was approved by the directors of both companies on Jan. 31 and meetings of stockholders to ratify the action had been called for March 15. Plans of the new company, which was to have been known as the Youngstown-Inland Steel Corporation, called for the issuance of 3,200,000 shares of stock, of which 2,000,000 shares were to have been given to holders of Sheet & Tube common stock on a basis of two new shares for one old,

and 1,200,000 shares to holders of Inland common on a share for share basis.

Following the failure of the merger, the Youngstown Sheet & Tube Co. is planning to develop further its Chicago district properties. Installation of sheet and rail mills is under consideration and a further rounding out of present capacity is planned, while harbor frontage is to be improved.

President James A. Campbell, in his annual statement, states that last year the company expended \$8,879,727 for new construction, improvement of equipment and for other capital outlays, and has under construction at present a new boiler and power plant at the Campbell works, and new coke ovens at the South Chicago plant. These two developments, together with some other improvements, will require a capital expenditure of about \$12,500,000. Last year, the company put into operation its new tin plate plant at Indiana Harbor and seamless tube mills at the Campbell works.

"During January, 1928," the statement continues, "there has been a noticeable increase in volume of business and from every indication this volume should be maintained. It is expected that there will be an improvement in prices as compared with the last half of 1927."

Differences over directorate control were largely responsible for the failure of the merger plan, which was dropped after agreement had been reached upon nearly all other major details.

February Sheet Production by Independent Mills Was 330,565 Tons

PITTSBURGH, March 13.—February was a good shipping and production month for the independent sheet steel manufacturers reporting to the National Association of Sheet and Tin Plate Manufacturers, which in its monthly report discloses production of 330,565 net tons or 14,024 tons ahead of that for January, while the month's shipments of 298,420 tons were 24,294 tons in excess of those of the month before.

Sales for the month were 266,210 tons, or 36,711 tons below those for January. Unfilled orders at the end of February amounted to 667,054 tons, a loss for the month of 27,143 tons.

The report does not include figures of orders on hand awaiting shipment or unsold stocks.

The total number of mills in the United States was 718, having a capacity for February of 461,750 tons and the percentage of that capacity reporting was 72.6. Sales were 79.5 per cent of capacity reporting, production 98.7 per cent, shipments 89.1 per cent and unfilled orders 199.2 per cent. Comparative figures follow:

| | February | January | December |
|----------------------------|----------|---------|----------|
| Total number of mills..... | 718 | 720 | 719 |
| Capacity per month..... | 461,750 | 486,550 | 472,064 |
| Per cent reporting..... | 72.6 | 72.6 | 72.6 |
| Sales | 266,210 | 302,921 | 530,197 |
| Production | 330,565 | 316,541 | 260,130 |
| Shipments | 298,420 | 274,126 | 221,689 |
| Unfilled orders | 667,054 | 694,197 | 745,393 |
| Unshipped orders | | 110,945 | 97,630 |
| Unsold stocks | | 59,508 | 53,474 |
| Percentages to Capacity | | | |
| Sales | 79.5 | 85.7 | 154.7 |
| Production | 98.7 | 89.6 | 75.9 |
| Shipments | 89.1 | 77.6 | 64.7 |
| Unfilled orders | 199.2 | 196.5 | 217.5 |
| Unshipped orders | | 31.4 | 28.5 |
| Unsold stocks | | 16.8 | 15.3 |

The twelfth annual Swiss Industries Fair will be held at Basel, Switzerland, April 14 to 24, inclusive. The fair embraces 20 industrial groups and about 1000 exhibitors are expected. Information may be obtained from the Consulate General of Switzerland, 479 Fourth Avenue, New York.

British Steel Output Large in February—Pig Iron Small

LONDON, ENGLAND, March 13 (*By Cable*).—Pig iron output in February was 550,800 gross tons, while that of steel was 764,400 tons, castings included. In January pig iron was 560,600 tons and steel was 626,200 tons.

The February steel output was the largest since September, 1927, when it was 777,000 tons. The pig iron production last month was the smallest since January, 1927. A comparison of the February production with January and the monthly rate for previous years is shown in the following table in gross tons:

| | Pig Iron, Tons | Steel Ingots and Castings, Tons |
|---------------------------|----------------|---------------------------------|
| 1913—Average monthly..... | 855,000 | 638,600 |
| 1920—Average monthly..... | 669,500 | 755,600 |
| 1922—Average monthly..... | 408,500 | 490,100 |
| 1923—Average monthly..... | 620,000 | 706,800 |
| 1924—Average monthly..... | 609,900 | 685,100 |
| 1925—Average monthly..... | 519,700 | 616,400 |
| 1926—Average monthly..... | 203,500 | 296,700 |
| 1927—Average monthly..... | 607,800 | 758,200 |
| 1928—January | 560,600 | 626,200 |
| 1928—February | 550,800 | 764,400 |

Stronach Nail Co. to Manufacture Special Nails at Ellwood City, Pa.

The Stronach Nail Co., recently incorporated under the laws of Pennsylvania, is engaged in the manufacture of a special nail which, on account of a triangular point of smaller section than the cross-section of the shank, does not spread the fibers of the wood, thus helping to avoid splitting. The company has acquired the former plant of the American Steel Co., at Ellwood City, Pa., containing 110,000 sq. ft. of floor area and a 20-acre plot. Several of the special machines for making the new nail, which were built by the Pennsylvania Engineering Works, New Castle, Pa., have been installed, and the company plans eventually to install 100 of these machines at this plant and also to locate manufacturing facilities in other parts of the country. The new nail was designed by H. S. Stronach, formerly head of the industrial department West Coast Lumber Trade Extension Bureau, who now is vice-president and sales manager of the Stronach Company.

OXYGEN PRODUCTION

Nearly All American Plants Use Liquid Air Process

DATA on the amount of oxygen produced for cutting and welding were given by H. J. Mueller, president Universal Oxygen Co., Sheboygan, Wis., in an address before a welding conference at the University of Wisconsin, Feb. 8, 1928. He noted that the commercial production of oxygen from water by electrolysis commenced in the United States in 1907. Many improvements were made by American engineers, and before long electrolytic oxygen plants were found in nearly every State.

Liquid air oxygen was first produced in 1907 by the Linde Air Products Co. at Buffalo. The Superior Oxygen Co., Pittsburgh, was started in 1913, using processes patented by the German, Doctor Hildebrand, but was later absorbed by the Air Reduction Co., operating under French patents of Doctor Claude. The majority of the electrolytic oxygen producers have also converted their plants to use either the "Messer" or the "Heylandt" system of separating oxygen from liquid air.

At the present time there are approximately 155 oxygen producing plants in the United States, and in addition at least 500 warehouses and distributing stations. From these sources an increasing amount of oxygen is being used for cutting and welding all kinds of metal.

Total production is estimated by Mr. Mueller as follows:

| Year | Cubic Feet Produced | Total Value | Cost Per Cubic Foot |
|-----------|---------------------|-------------|---------------------|
| 1909..... | 3,814,000 | \$177,469 | 4.7c. |
| 1914..... | 104,714,000 | 1,829,446 | 1.75c. |
| 1918..... | 1,355,000,000 | 18,292,500 | 1.35c. |
| 1919..... | 1,173,414,000 | 16,545,137 | 1.41c. |
| 1921..... | 1,059,825,000 | 13,964,952 | 1.32c. |
| 1923..... | 2,057,526,000 | 23,382,236 | 1.14c. |
| 1925..... | 2,073,826,000 | 22,577,110 | 1.09c. |

While the actual figures for 1926 and 1927 are not available, it is thought that the volume produced is steadily increasing. The average cost per cubic foot is now less than one cent.

Data for European countries in 1926 are as follows:

| | |
|------------------------|-----------------------|
| Germany | 1,050,000,000 cu. ft. |
| France | 700,000,000 cu. ft. |
| Italy | 350,000,000 cu. ft. |
| Great Britain | 320,000,000 cu. ft. |
| All other Europe | 504,000,000 cu. ft. |

Receivers Appointed for Bollinger-Andrews Construction Co.

Theodore I. See and John H. Lucas have been appointed temporary receivers of the Bollinger-Andrews Construction Co., Verona, Pa. A bill in equity filed by John W. Fisher and Violante Bennett, the latter the principal owner, in which they asked for the receivers, said that this was essential to safeguard the interests of the creditors and stockholders. The company, which is engaged in the manufacture and erection of structural steel buildings and steel fabricating, has a plant at Verona. The assets amount to \$1,081,000, and there are liabilities of \$770,000. The company has materials on hand and also contracts, and it is necessary to borrow funds with which to complete the contracts.

Butte to Produce Manganese Ore

BUTTE, MONT., March 12.—Construction work at the Domestic Manganese & Development Co. is nearing completion, according to a statement issued by John H. Cole, president. It is planned to start operations in the spring, when deliveries of ore from the Anaconda Copper Mining Co. are due to commence. The five-year contract calls for 400,000 to 500,000 tons of rhodochrosite ore, crushed through 2½-in. screen.

Equipment is being installed in the dust chamber of the late Sen. W. A. Clark's smelter, idle 17 years. Alongside this building has been built a 45-ft. trestle, with bins underneath for the incoming ore. Apron-type feeders discharge into a conveyor and elevator leading to a central overhead feed bin. From here the ore is

spouted into four rotary kilns, 8 ft. in diameter by 125 ft. long, made by Allis-Chalmers Mfg. Co., Milwaukee. Moisture and carbon dioxide gas will be driven from the ore before it gets very far in these kilns, and toward the hot lower end it will be sintered into clinker.

Emerging from the lower end of the kiln, the hot clinker will fall through the floor into a rotary cooler, 5 ft. diameter by 50 ft. long, set in the cellar. Each kiln has its own cooler. Cooled clinker (a high grade manganese ore) will be loaded into box cars for shipment to eastern furnace plants. Furnace gases are wasted through the old smelter stack of concrete, 360 ft. high.

Aliquippa Furnace Produced 285,148 Tons of Iron in 1927

A remarkable blast furnace performance called to the attention of THE IRON AGE is that of No. 2 Aliquippa furnace of the Jones & Laughlin Steel Corporation. This furnace in 1927 produced 285,148 gross tons of pig iron, which exceeds by more than 1000 tons the production of the A furnace of the American Steel & Wire Co., Cleveland, reported last week. Since its last relining on Dec. 14, 1924, the Aliquippa stack has been in continuous operation and had produced up to March 9, this year, 863,545 gross tons. Its best daily performance was on March 1, 1927, when it produced 1022 gross tons.

Sheffield Steel Corporation Issues \$2,000,000 Bonds for Expansion

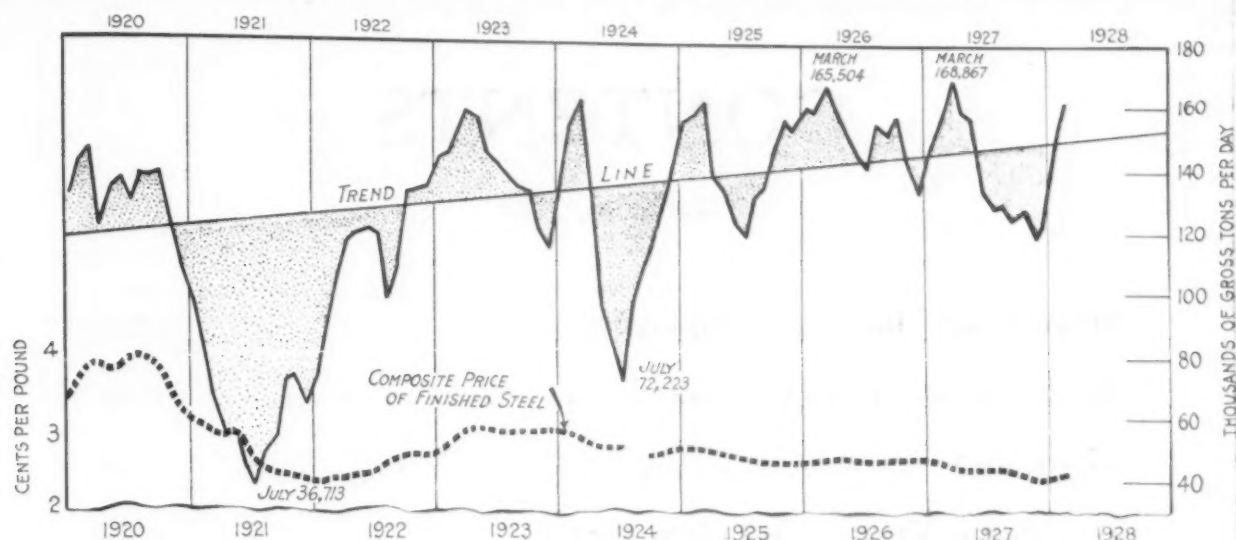
The Sheffield Steel Corporation, Kansas City, Mo., formerly the Kansas City Bolt & Nut Co., has announced the issuance of \$2,000,000 worth of 5½ per cent gold bonds, the proceeds to be used for plant expansion. The company now has three open-hearth furnaces, a bar iron and rail rerolling mill, sheet mill and bolt, nut and forging works. To this equipment will be added a fourth open-hearth furnace, a wire mill, a combination bar and rod mill and a blooming mill. The bolt and nut department will be rearranged and enlarged. In addition to the \$2,000,000 bond issue, the company has arranged for the sale of \$1,250,000 preferred stock. Total expenditures for plant improvements will be about \$3,000,000 and the balance, derived from bond and stock sales, will be added to working capital. W. L. Allen is president of the company. The bond issue has been arranged through Eastman, Dillon & Co. and the Prescott, Wright, Snider Co., New York.

The Sheffield company has awarded a contract to the Morgan Construction Co., Worcester, Mass., for a combination bar and rod mill and a continuous billet mill. Contracts for the blooming mill and wire equipment have not been awarded.

Rates on Pipe to Oklahoma Held Unreasonable

WASHINGTON, March 13.—Passing upon a complaint by the Oklahoma Natural Gas Co. and others, Examiner W. M. Carney, in a proposed report made to the Interstate Commerce Commission last week, held that freight rates charged on carload shipments of wrought iron and steel pipe, fittings and connections from certain points in Pennsylvania, Ohio and West Virginia to numerous destinations in Oklahoma were unreasonable. Reparation was recommended on the basis of the rates prescribed in the Southwestern cases. Typical rates to a large destination group in Oklahoma were 88.5c. and 85.5c. per 100 lb. from Pittsburgh and Youngstown respectively. In the decision in the Southwestern cases Youngstown was given the same rates as Pittsburgh, and the findings of the examiner are in accordance with that opinion but, he pointed out, "are in that respect without any prejudice to any different conclusion that may hereafter be adopted as to the proper relationship of rates from Pittsburgh and Youngstown."

With the Largest February Ingot Production Ever Recorded, the First Two Months of 1928 Are Ahead of Any Previous Year. Prices were slightly higher than in January



Largest February Ingot Production

Daily Rate of 160,591 Tons Was 5 Per Cent Above January

—Two-Month Total Largest Ever Recorded

PRODUCTION of steel ingots in the United States in February is calculated by the American Iron and Steel Institute at 4,014,774 gross tons. This is based on returns from companies which in 1926 produced 95.40 per cent of the total. It represents the largest February tonnage ever recorded and is the fifteenth time any month has gone past 4,000,000 tons. With 25 working days, the estimated output was 160,591 tons a day, the fourth month which ever exceeded 160,000 tons a day. This compares with 152,354 tons (revised) in January and with less than 120,000 tons as recently as November. Only one month last year—March, with the highest tonnage ever made in one month—exceeded last month's daily rate.

For the two elapsed months of the year the calculated production of 7,975,983 tons is the greatest ever made in the first two months of any year. It exceeds by less than 1 per cent the corresponding figures of 1926 and 1925, and by a considerably larger margin the figures for 1927, 1924 and 1923, all of which showed more than 7,300,000 tons in the first two months. Gains in February were made both in open-hearth and in

Bessemer steel. Compared with a year ago, however, the open-hearth production shows an increase of nearly 9 per cent, while the Bessemer production shows a drop of nearly 8 per cent. The total output, with one extra working day, represents a gain of about 6 per cent over February, 1927.

Estimating production in February of electric and crucible steel ingots (no longer covered in the institute's monthly figures) at 1200 tons a day, the total February ingot output would appear to be about 161,800 tons each working day. Details of the past 14 months are shown in the table.

Lower Pig Iron Imports

Reduction of 22 per cent in imports of pig iron is shown by the January total of 11,090 gross tons, compared with 14,299 tons in December. A much greater decline is indicated by the totals for seven months ended Jan. 31, which were 83,376 tons this year, against 138,053 tons last year, a drop of over 39 per cent.

British India has dominated the scene in the seven months, having furnished nearly 60 per cent of the total, whereas in the preceding year Germany supplied 53 per cent of all and India only 11 per cent. Netherlands has occupied second position in each period. The table gives details.

UNITED STATES IMPORTS OF PIG IRON, BY COUNTRIES OF SHIPMENT

| | (In Gross Tons) | | Seven Months Ended January | |
|----------------------|-----------------|-------|----------------------------|---------|
| | January | | 1928 | 1927 |
| | 1928 | 1927 | | |
| United Kingdom | 3,750 | ... | 12,986 | 12,012 |
| British India | 5,637 | 246 | 49,469 | 15,476 |
| Germany | 40 | 5,272 | 1,440 | 73,019 |
| Netherlands | 1,446 | 3,700 | 14,805 | 28,020 |
| Canada | 172 | ... | 208 | 1,749 |
| France | ... | ... | 3,000 | 3,416 |
| Belgium | ... | ... | 399 | 1,840 |
| All others | 45 | 108 | 1,069 | 2,521 |
| Total | 11,090 | 9,326 | 83,376 | 138,053 |

The fifth annual convention of the National Association of Foremen will be held on May 25 and 26 at Canton, Ohio, the general subject of the meetings being the "Foreman As An Executive." E. H. Tingley, 1249 U. B. Building, Dayton, Ohio, is secretary.

| Production of Steel Ingots* | | | | |
|-----------------------------|---|---|--|---------|
| (Gross Tons) | | | | |
| Months | Reported by Companies Which Made 95.40 Per Cent of the Steel Ingots in 1926 | Calculated Monthly Production All Companies | Approximate Daily Production All Companies | |
| 1928 | | | | |
| Jan.† ... | 3,280,247 | 498,746 | 3,961,209 | 152,354 |
| Feb. | 3,308,728 | 521,366 | 4,014,774 | 160,591 |
| 2 Months | 6,588,975 | 1,020,112 | 7,975,983 | 156,392 |
| 1927 | | | | |
| Jan. | 3,041,233 | 545,690 | 3,759,877 | 144,611 |
| Feb. | 3,042,232 | 565,201 | 3,781,376 | 157,557 |
| 2 Months | 6,083,465 | 1,110,891 | 7,541,253 | 150,825 |
| March .. | 3,701,418 | 590,716 | 4,499,092 | 166,633 |
| April ... | 3,340,852 | 565,634 | 4,094,849 | 157,494 |
| May | 3,272,810 | 557,683 | 4,015,192 | 154,430 |
| June | 2,822,477 | 486,047 | 3,468,055 | 133,387 |
| July | 2,595,692 | 436,446 | 3,178,342 | 127,134 |
| Aug. | 2,805,657 | 505,584 | 3,470,905 | 128,552 |
| Sept. | 2,611,976 | 471,455 | 3,232,108 | 124,312 |
| Oct. | 2,641,920 | 495,798 | 3,289,013 | 126,500 |
| Nov. | 2,477,253 | 481,830 | 3,101,764 | 119,299 |
| Dec. | 2,557,130 | 448,299 | 3,150,345 | 121,167 |
| Total.. | 34,910,650 | 6,150,383 | 43,040,916 | 138,395 |

*Excluding crucible and electric steel ingots.
†Revised.

CONTENTS

March 15, 1928

| | |
|---|-----|
| Preventing Thefts by Employees | 723 |
| Structural Steel and Concrete Bars | 725 |
| Aluminum Foundry Rearranged | 726 |
| Systematic View of Stainless Steels | 729 |
| One-Ton Acid Open-Hearth Furnace | 731 |
| Unemployment Not Machine Made | 733 |
| Emergency Repairs to Sheet Mill Drive | 735 |
| Changes in Exports and Imports | 741 |

| | |
|--|-----|
| Magnet Handles Strip Steel..... | 728 |
| Iron-Silicon Equilibrium Diagram..... | 730 |
| New List of Standard Samples..... | 732 |
| Acquires Lamb & Nash Line of Shears. | 736 |
| Beaded Ribs on a Pattern..... | 738 |
| Automotive Parts Makers Merged..... | 738 |
| "Story of Iron" Motion Picture..... | 739 |
| Metallurgical Fellowships Offered..... | 740 |
| Report on Migration of Industry..... | 747 |
| New Alloy Steel Bar Schedule..... | 747 |
| Extinction of Merchant Marine..... | 748 |
| Youngstown-Inland Merger Off..... | 749 |
| To Manufacture Non-Split Nails..... | 749 |
| Butte to Produce Manganese Ore..... | 750 |
| Aliquippa Furnace Made 285,148 Tons.. | 750 |
| Sheffield Bonds for Expansion..... | 750 |
| Railroad Freight Rates..... | 750 |
| Steel Replaces Wood in Towers..... | 756 |
| To Rebuild Susquehanna Stack..... | 757 |
| To Make Corrugated Sheets on Coast.. | 762 |
| Youngstown-Ohio River Railroad..... | 774 |
| To Study Gray Iron Foundry..... | 777 |
| Foreign Commerce Handbook..... | 779 |
| New Strip and Sheet Association..... | 779 |
| New Trade Publications..... | 780 |

MEETINGS

| | |
|---------------------------------------|-----|
| Society for Testing Materials..... | 740 |
| Waste Material Dealers..... | 740 |
| Coming Meetings | 740 |
| Northwest Iron and Steel Conference.. | 740 |
| National Foreign Trade Council..... | 740 |

NEW EQUIPMENT

| | |
|--------------------------------|-----|
| Large Sheet Pack Opener..... | 736 |
| Plow Bolt Cold Header..... | 737 |
| New Shears for Mild Steel..... | 738 |

| | |
|-----------------------------------|-----|
| Portable Grinder and Sander..... | 739 |
| Micrometer for Rapid Reading..... | 739 |
| Flexible Conveyor Carriers..... | 739 |

STATISTICAL

| | |
|---|-----|
| Shipments of Sheet-Metal Ware..... | 743 |
| Statistical Abstract of United States... | 743 |
| Highest February Building Contracts... | 743 |
| Steel Corporation Unfilled Orders..... | 747 |
| Imports of Finished Steel Into India... | 747 |
| Smaller Ore Shipments in 1927..... | 748 |
| Iron and Steel in Water-Borne Com- merce | 748 |
| British Iron and Steel Output..... | 749 |
| Independent Sheet Production..... | 749 |
| Oxygen Production | 750 |
| Largest February Ingot Output..... | 751 |
| Lower Pig Iron Imports..... | 751 |
| Higher Trackwork Shipments..... | 757 |
| Exports of Tractors at Record Level... | 782 |
| Luxemburg Increases Output..... | 782 |

DEPARTMENTS

| | |
|-------------------------------------|---------|
| Business Analysis and Forecast..... | 744 |
| Editorial | 754 |
| Structural Awards and Projects..... | 757 |
| Iron and Steel Markets..... | 758 |
| Comparison of Prices..... | 759 |
| Prices, Raw and Finished Products.. | 761-763 |
| Non-Ferrous Metals | 775 |
| Reinforcing Steel Business..... | 776 |
| Railroad Equipment Buying..... | 776 |
| Obituary | 777 |
| Personals | 778 |
| European Steel Markets..... | 781 |
| Machinery Markets | 783 |

This Issue in Brief

Unemployment situation is not critical, says economist. While the present number of unemployed is probably in excess of normal, the average industrial wage earner is in an excellent condition to cope with unemployment, inasmuch as the margin between wages and living expenses is larger than ever.—Page 734.

Prevent petty thefts on the part of employees by careful supervision of labor and materials in process. Hiring of paid spies is expensive and creates ill-will.—Page 723.

Aluminum foundry doubles output, with 40 per cent less floor space, by rearrangement of equipment. Careful planning of material-handling equipment installation enables foundry to make a considerable saving in man-hours without a heavy capital investment.—Page 728.

Cutting blowpipe saves \$1,900 in repairing main drive gear. To remove gear from shaft and machine off surplus metal would have taken four days' time and cost \$2,000. Cutting blowpipe and oxygen lance did the work in 14 hours, at a cost of \$110.—Page 735.

Midget open-hearth furnace is found successful in experimental work. One-ton furnace duplicates results produced by its full-grown brothers. A very high temperature is obtainable.—Page 731.

Electro-magnet picks up wooden boxes filled with steel. Strip steel producer finds that magnet handles his product most satisfactorily. When coils are to be lifted, the lifting capacity of the magnet is increased by interposing a sheet of steel between the magnet and the coils.—Page 728.

Steel loses two million tons a year to concrete building construction. About half of our large buildings are now structural steel, and the other half are concrete, but the gains made in concrete are much larger than in steel.—Page 725.

In using stainless steel, be sure you select the right grade for your particular requirements. There are three distinct groups, each with its own properties. A metallurgist tells you which is best suited for each purpose.—Page 730.

You can obtain standard samples of raw materials from the Bureau of Standards for \$1 to \$3. The bureau lists the kinds available, and furnishes a certificate of analysis with each.—Page 732.

Favorable business is forecast by continued rise in building contracts, says Dr. Haney. The indications are for continued large volume, an optimistic omen of considerable weight.—Page 741.

More foreign steel coming into the country. Imports are considerably above pre-war totals, while steel exports are below the pre-war average.—Page 741.

Good business but small profits for steel industry during first half of year, Dr. Haney forecasts. Indications are that the volume of steel business will increase, but that it will not be done on a very profitable basis.—Page 744.

Labor-saving equipment is not responsible for unemployment, says National Industrial Conference Board chief. Mechanization of industry creates new wants and new tasks, he declares.—Page 733.

February daily steel output was highest in history, with a single exception. Daily tonnage was 160,591, a gain of 5 per cent over January, and exceeded only in March, 1926, with 166,633.—Page 751.

Automotive output gains 40 per cent. Total production of cars and trucks (without Ford) in February was 325,778, as against 232,685 in January. The increase over February, 1927, was 30 per cent.—Page 754.

Unfilled steel orders at highest point in two years. Steel Corporation reports a total of 4,398,189 tons of orders on Feb. 29, a gain of almost 3 per cent over January.—Page 747.

ESTABLISHED 1855

THE IRON AGE

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Automobile Plants Doing Well

PRODUCTION of automobiles in February was remarkably heavy. Already the reports from the trade show larger production for this month, and shipping orders from that quarter to the steel mills indicate a further gain for April. As Ford is still in light production, and Ford output is not reported to the National Automobile Chamber of Commerce, the chamber figures are of particular interest. Covering substantially the total production of cars and trucks in the United States and Canada outside of Ford the chamber reports for February of this year 325,778, or 40 per cent increase over January of this year (232,685), and 30 per cent increase over February, 1927, for which the figure was 251,137.

Ford was in production in February, 1927, when the total production according to Department of Commerce figures was 323,418. Thus the N. A. C. C. members produced 2360 more units last month than the entire industry, including Ford, produced in the preceding February, and that production was not particularly low. It was under that of February in 1926 and 1924, but was above February production in 1923 and 1925.

There has been much speculation as to what will happen to the sale of other cars when Ford has been in heavy production for a while and will be able to make prompt deliveries. Such discussion is largely beside the mark, for the most active season will be long past when that occurs. In 1924, 1925 and 1926 April was by far the heaviest month, and in 1927 it yielded to May by only a few hundred cars. Ford produced 1200 daily last week with an expectation of a 1500 daily rate by the end of this week. With a five-day week a permanent fixture, that is a monthly rate of 32,500, or just one-tenth of last month's N. A. C. C. production. Obviously the Ford peak will not come until after July 1.

The automobile trade has reflected its prosperity by not being captious about the steel industry's efforts to secure higher prices for its products. Individual buyers in the automobile trade express their willingness to pay advanced prices for steel when such advances are being paid generally.

Yet heavy deliveries of steel to the automobile industry should not be interpreted as placing the steel industry in particularly favorable position. According to the annual presentations of THE IRON AGE as to the distribution of steel, the average allocation to the automobile industry in the past three years has been about 14 per cent, and as the average car is lighter now than formerly a little discount needs to be applied when figures of number of automobiles produced are considered. By far the more important showing of the automobile statistics is the evidence of the public's buying power. Granting for argument that the automobile has changed from a luxury to a necessity, it would still appear that a new car instead of retention of an old one may be regarded as a luxury.

Railroad Gage Runs High

THE freight ton-mileage of the railroads is one of the best indexes of general industrial activity; and as railroad work is industrial activity the total, including non-revenue freight movement, is perhaps a better index than the revenue ton-mileage alone. There has been remarkably little variation in the past five years, as shown by the following figures, with the percentage departure from 1923 indicated:

| | Freight Ton-Mileage Ton-Miles, Revenue and Non-Revenue | Percentage-Variation From 1923 |
|-----------|--|-----------------------------------|
| 1923..... | 456,237,879,523 | .... |
| 1924..... | 426,833,710,571 | -6.4 |
| 1925..... | 452,818,681,431 | -0.7 |
| 1926..... | 488,701,825,000 | +7.1 |
| 1927..... | 474,682,943,000 | +4.1 |

It seems unfair in the light of these figures to call 1927 an off year at all. Rather there is plainly indicated a longer range increase. It is quite true there has been a much smaller increase in freight movement, on the ton-mile basis, in recent years than there used to be, but railroading is now mature and a slower growth is perfectly natural.

Of course, from the railroad viewpoint the showing is unfavorable. The railroads have been earnestly striving to show greater and greater efficiency, and one result of their success has been

steadily increasing car surpluses. The average surplus in 1927 was 260,958 cars. It would be much better for the railroads if enough increase in freight movement were forthcoming to engage their facilities, which are thus increasing through gains in efficiency.

On the basis of public interest, the service rendered by the railroads has increased much more than the ton-mileage figures indicate. The railroads have lost business, so to speak, to water and motor transport. This was business which shippers preferred to divert. There is correspondingly greater increase in that service which railroads are best fitted to perform.

There has been also an improvement in the value of service relative to the ton-mile, the proportion of less valuable movement decreasing while the relative movement of foodstuffs and other high-class material has increased. Foods formerly considered out of season are made available by long hauls. There is no likelihood, therefore, that railroad freight movement will fail to continue increasing, though at what may seem like a moderate pace by comparison with old standards, for long ago the total railroad freight ton-mileage had a way of doubling approximately every dozen years.

Salvaged Metal Acquires Dignity

EVEN though all of us recognize the need of saving scrap metal in order to conserve natural resources, and most of us were once thrifty enough to seek a purchaser for any waste metal we may have had (from an old kitchen stove to continuous tonnages of brass turnings from screw machines), yet when we speak of the scrap metal industry there is commonly the vision of a miserable pony hauling a rickety spring wagon down the back alley, and a bearded junk dealer jangling a cracked cow-bell.

Eventually the gleanings of this lowliest member of a large industry reach the smelter or melter for conversion into useful ingot form. Before they can go to the furnace, however, they must all pass over the sorter's table, and he is a man whose skill must be uncanny. We who could not surely sort a lot of mixed malleable castings, steel castings and drop forgings without a laboratory full of scientific tools are lost in admiration for the man who with a file and a hammer can sort yellow brass into a dozen principal classes, who can throw zinc-bearing die castings into the proper bin and keep aluminum bronzes all by themselves, and can generally classify the incoming material into the 250 lots made necessary by the requirements of the smelting department and the ingenuity of the alloy makers. He must have all the attributes of a member of a skilled profession.

How well the secondary metal industry is organized from top to bottom may be inferred from the knowledge that more than half as much copper is salvaged and resold as is made from virgin ores. Of lead, 25 per cent; of aluminum 40 per cent. Obviously such large by-product supplies are effective balance wheels, preventing violent fluctuations in market prices. Higher prices of virgin metals tend to bring out increasing supplies of second-hand material; on the other hand, if prices drop unduly, the total supply of used material contracts

sharply, because it is no longer profitable to collect and dispose of the old stuff. Low prices are checked by scarcity.

It is time to revise antique opinions about the salvaged metal industry. It requires the services of skilled professions; it is blessed by economic science, and it has a national trade association. In other words, it is quite respectable.

Steel Company Earnings

EARNINGS of steel producers in the first quarter probably will not greatly exceed those of the disappointing fourth quarter of last year, notwithstanding the heavier production and shipments in the current period, and it is not to be expected that this quarter's profits will equal those of the first quarter of last year. During 1927, it will be recalled, prices declined steadily and the average in December, as shown by THE IRON AGE composite price, was \$2.44 per ton below that of the opening month of the year. It was upon the low level of last December that most of this quarter's contracts were based. In plates, shapes and bars, for example, a heavy tonnage moved to consumers during January and February at 1.75c., Pittsburgh, and not until this month have steel companies got the full benefit of the contracts made at 1.80c. The increased operations since the first of the year will help out earnings in this quarter to some extent, but it is to the second quarter that the steel trade looks for real improvements in the profit column.

The Senate and Coal Economics

EIGHTEEN years ago the United States Senate was moved by "the high cost of living" to instruct a committee to investigate and report. The committee's findings came out about the middle of 1910. The Senate did not act to bring down the cost of living, which continued to increase. The report stressed two things—the migration from farm to town (which has continued but which has not forestalled the development of the opposite problem, the farm problem) and the introduction of higher standards of living. James J. Hill previously had put it more briefly, that the trouble was not the high cost of living but the cost of high living.

The Senate committee on coal has gone into the earnings of coal mine employees and it considers them too low; but it does not compare these earnings relative to the effort with earnings similarly considered in other industries. If it were to study all other industries it would find that the total income of the people of the United States is quite insufficient to buy as many eggs and as much bacon and numerous other things as the people ought to have. Yet all the commodities produced find buyers. The committee would also find that in manufacturing and mining industries generally a high degree of efficiency has been reached, with men hard at work all year, while in coal there are so many miners that employment averages very light.

There is good reason to expect that the Senate report on coal will fall as flat as did the report on the cost of living 18 years ago. Things will keep working out along the lines already being followed.

The cost of living did not come down. The higher standard came to be expected, and as to the number of people working on farms the idea nowadays is that the number ought to be reduced—and by the help of revolutionary machinery it is being reduced—while the old investigation had it that the difficulty was the number had been reduced.

What chiefly interests the general public today is the position of the coal miners who went on strike nearly a year ago, though the United Mine Workers called the affair a "suspension"—a technical hedge against the payment of strike benefits. The essence of the matter today, in the relation of these miners to the public, is that the miners have gone on a hunger strike. They want employment in the coal mines at union wage rates. If Washington wants to do something useful, to meet the precise situation that exists, it should endeavor to decant miners, whether those now at work on the terms available or those who are idle. The condition will not grow better in the near future, for doubtless on April 1 the union men in Illinois and other western States who have been working for some five months past on a temporary arrangement will resume their strike.

The New Scrap Situation

DEALERS in iron and steel scrap find it hard to account for a dull market at a time when steel works engagement is high; they are equally at sea in trying to formulate their plans. If steel manufacturers can get along with only moderate purchases of scrap when they are running at 85 per

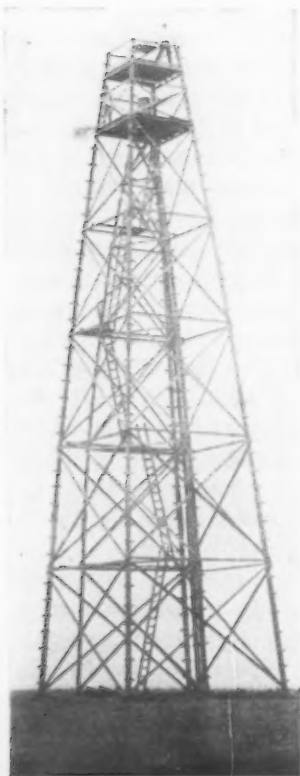
cent of capacity, there is naturally concern as to the scale of buying when the operating rate is at or below the average.

The problem is not nearly so complex as it appears. It is probable that the amount of commercial scrap taken by the steel makers is as large as it has been in recent years and that the dullness is more apparent than real. Buying of scrap, as of almost all commodities, has changed since it has become apparent to consumers that the necessity no longer exists for commitments well in advance of actual use. Steel works operating men must know the costs of their raw materials if they would make steel cheaply enough to meet the competition there has been and still is in prices of finished products. Scrap was the one item that in former years could not be safely figured until the scrap was ready to charge, because there never was absolute certainty that the manufacturer would get what he bought for the price he contracted to pay.

The remedy came in the large blast furnace and the reduction in unit cost which it afforded. Making pig iron in large quantities and at costs that were well defined, the steel companies merely figured pig iron instead of the fluctuating scrap price. Not only was speculation in old material largely eliminated, but control of prices passed from the scrap dealer to the consumer through the use of pig iron when the price of scrap was out of line. Thus the rate of steel works operation has had less than ever to do with the size of the demand for scrap. If the latter is cheap in relation to pig iron it will be bought, and there is just as much chance of good business in old material when steel production is moderate as when it is high.

Steel Replaces Wood in Survey Towers

BY J. S. BILBY*



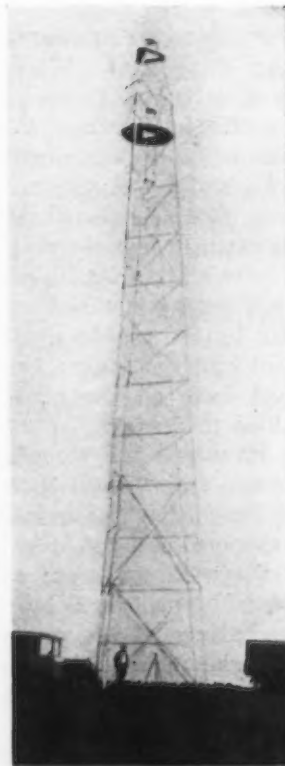
IN the measurement of long distances between primary survey points, the United States Coast and Geodetic Survey uses tall towers to enable the instrument men to sight over intervening obstacles. Formerly these were constructed of wood, at a labor and material cost of about \$400 per tower.

During the winter of 1926, J. S. Bilby, chief of party, designed a steel tower for this duty. A trial tower was built by the Aeromotor Co., Chicago, and some modifications were made in the design. Thirteen additional towers were bought, and were used in South Dakota and Minnesota last summer with great success. It will be observed that the inner tower, which supports the theodolite, is entirely separate from the outer, which supports the observer's platform and the signal top. The steel towers are so much more rigid than the wooden ones that work is not interrupted by a breeze, as in the past, but can continue in a wind of 25 miles per hour.

One double tower 75 ft. high weighs 4000 lb. complete. It can be dismantled and loaded on a truck by four men in 3 hr. and re-erected in 3½ hr. The total cost of a move of about 90 miles is about \$140, including all direct expense, overhead, depreciation and operation of truck, and subsistence.

Steel has thus effected a large saving in the cost of the triangulation towers, and an even greater saving in reducing the percentage of delays in observation time from windy weather.

*Chief of party, United States Coast and Geodetic Survey, Washington.



FABRICATED STRUCTURAL STEEL

New Projects Will Take 38,000 Tons—Awards of 37,250 Tons

INCLUDING an office building at Toronto and a pipe line at Oakland, Cal., requiring 8000 tons each, new projects amounted to 38,000 tons. Awards totaled 37,250 tons, the largest of which were a manufacturing building at Ford City, Pa., requiring 5000 tons, and 41 barges for use on the Mississippi River which took 4800 tons. Awards follow:

BOSTON, 200 tons, columns for Sears, Roebuck & Co. warehouse, to New England Structural Co.
 RICHMOND, VT., 321 tons, two bridges, to Bethlehem Bridge Co.
 STATE OF VERMONT, 400 tons, four bridges, to American Bridge Co.
 NEW YORK, NEW HAVEN & HARTFORD RAILROAD, 150 tons, bridge, to American Bridge Co.
 NEW YORK, 2000 tons, hotel at Forty-ninth Street and Lexington Avenue, to Harris Structural Steel Co.
 NEW YORK, 1000 tons, loft building at 241 West Twenty-ninth Street, to Hinkle Steel Construction Co.
 NEW YORK, 1075 tons, apartment buildings at 326 East Fifty-seventh Street and at 19 East Ninety-eighth Street, to Paterson Bridge Co.
 NEW YORK, 300 tons, apartment building on East Eighty-fifth Street, to Easton Structural Steel Co.
 BROOKLYN, 3300 tons, Greenpoint Avenue Bridge over Newtown Creek, to Bethlehem Steel Co.
 YONKERS, N. Y., 300 tons, Homeopathic Hospital, to Hinkle Steel Construction Co.
 STATE OF NEW JERSEY, 400 tons, highway bridge, to Phoenix Bridge Co.
 PHILADELPHIA, 525 tons, American Bank & Trust Co. building, to American Bridge Co.
 PHILADELPHIA, 175 tons, Quaker City Garage, to McClintic-Marshall Co.
 SEABOARD AIR LINE RAILROAD, 166 tons, Stony Creek bridge, to Virginia Bridge & Iron Co.
 LAUREL, MD., 1800 tons, grandstand, to Belmont Iron Works.
 BIRMINGHAM, 150 tons, river terminal at Birmingham, to Virginia Bridge & Iron Co.
 SHREVEPORT, LA., 450 tons, viaduct, to Wisconsin Bridge & Iron Co., Milwaukee.
 MEMPHIS, TENN., 4800 tons, 41 barges for Mississippi River Commission, to American Bridge Co.
 PITTSBURGH, 550 tons, Stanley East Liberty Theater, to Fort Pitt Bridge Works.
 FORD CITY, PA., 5000 tons, Pittsburgh Plate Glass Co. plant, to McClintic-Marshall Co.
 SCRANTON, PA., 475 tons, warehouse for Continental Terminals, Inc., to Bethlehem Fabricators, Inc.
 DETROIT, 2500 tons, building for National Plate Glass Co., to Mississippi Valley Structural Steel Co.
 TOLEDO, OHIO, 650 tons, Catholic High School, to Massillon Bridge & Structural Co.
 DAYTON, OHIO, 250 tons, building for Dayton Art Museum, to Massillon Bridge & Structural Co.
 CHICAGO, 100 tons, auditorium and natatorium in Holden Park, to Midland Structural Steel Co., local.
 CHICAGO, 1500 tons, gas holder for By-Products Coke Corporation, to an unnamed bidder.
 CHICAGO, 2800 tons, Robey Street viaduct; 1200 tons in Bascule span, to Mount Vernon Bridge Co., and 1600 tons in approach, to American Bridge Co.
 DES MOINES, IOWA, 1850 tons, telephone building, to Pittsburgh-Des Moines Steel Co.
 OTTAWA, ILL., 2500 tons, building for National Plate Glass Co., to Mississippi Valley Structural Steel Co.; reported last week as having gone to an unnamed fabricator.
 ST. LOUIS, 750 tons; 450 tons for Knights of Pythias Temple, and 300 tons for Nafziger Bakery, to Mississippi Valley Structural Steel Co.
 ALBUQUERQUE, N. M., 350 tons, bridge across Rio Grande River, to Kansas City Structural Steel Co.
 SEATTLE, WASH., 1500 tons, office building at Fourth Street and Union Avenue, to Wallace Bridge & Structural Steel Co.
 SAN FRANCISCO, 300 tons, apartment building at Stockton and Pine Streets, to Herrick Iron Works.
 SAN FRANCISCO, 225 tons sheet piling, Ocean Beach Esplanade, to United States Steel Products Co.
 SOUTH PASADENA, CAL., 100 tons, high school, to Minneapolis Steel & Machinery Co.

MONROVIA, CAL., 100 tons, high school, to Minneapolis Steel and Machinery Co.

LOS ANGELES, 620 tons, two 80,000-bbl. tanks for Western Oil Co., to Western Pipe & Steel Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

NEW HAVEN, CONN., 1600 tons, power house for United Illuminating Co.
 WEYMOUTH, MASS., 600 tons, switch house addition for Edison Electric Illuminating Co. of Boston.
 ALBANY, N. Y., 600 tons, office building.
 NEW YORK, 5000 tons, section 2, route 109, of municipal subway system; bids March 23.
 STATE OF NEW YORK, 500 tons, highway bridges.
 VENTNOR, N. J., 165 tons, Town Hall, bids opened.
 PERTH AMBOY, N. J., 218 tons, Fayette Street bridge.
 PENNSYLVANIA RAILROAD, 600 tons, bridges at Philadelphia and Harrisburg, Pa.
 ROCKLAND, DEL., 104 tons, "Rising Sun" bridge over Brandywine Creek.
 CUMBERLAND, MD., 2300 tons, Celanese Corporation, plant addition, Hughes-Foulkrod Co., general contractor.
 NEW CASTLE, PA., 200 tons, garage for Shenango Motor Co.
 NEWARK, OHIO, 200 tons, Baltimore & Ohio Railroad freight station.
 TORONTO, 8000 tons, office building for Canadian Bank of Commerce.
 TORONTO, 500 tons, electrical and engineering building for Canadian National Exhibition.
 TORONTO, 200 tons, addition for Patterson Canada factory.
 TORONTO, 200 tons, addition to Lackie Mfg. Co.
 EVANSTON, ILL., 185 tons, Boltwood School.
 CHICAGO, 125 tons, coal trestle for Department of Public Works.
 CHICAGO, 5000 tons, building for Peet Soap Co., Holabird & Roche, architects.
 KLAMATH FALLS, ORE., 1000 tons, timber mill building.
 GREAT FALLS, MONT., 600 tons, high school.
 PULLMAN, WASH., 130 tons, home economics building, Washington State College; bids in.
 SEATTLE, 2000 tons plates, penstock for city; Puget Sound Machinery Depot, low bidder.
 OAKLAND, CAL., 8000 tons, plates, pipe line for East Bay Municipal Utility District; bids April 20.

Hanna Company to Rebuild No. 4 Susquehanna Stack at Buffalo

The Hanna Furnace Co., Cleveland, will soon begin the rebuilding of one of its blast furnaces in Buffalo. The stack to be torn down and replaced by a larger furnace is the No. 4 Susquehanna furnace acquired from the Rogers-Brown Iron Co. last year. The present stack was built in 1912.

The new stack will have a 20-ft. hearth, 24-ft., 3-in. bosh and its height will be 85 ft., 4½ in. Its rated capacity will be 700 to 800 tons per day, but conforming to what is commonly regarded as good furnace practice in the manufacture of pig iron for the foundry trade, no attempt will be made to obtain a maximum output. It probably will be operated at a capacity of about 600 tons per day. Present stoves will not be replaced, but the stoves, boiler plant and auxiliary equipment will be modernized. Pressure burners will be installed on the stoves and boilers. The furnace will be equipped with a new gas washer and dust catcher.

Contracts for rebuilding the furnace will be placed shortly, and it is expected to be ready for operation next fall.

Higher Trackwork Shipments

February shipments of trackwork are reported by the American Iron and Steel Institute at 11,371 tons, the largest total since last August. The gain over January's 9332 tons was nearly 22 per cent. In February, 1927, the shipments were 13,678 tons, and the average month of 1927 showed 13,386 tons.

Iron and Steel Markets

Steel Prices Less Buoyant

Advance on Cold-Finished Steel Bars Withdrawn—Test of Increased Prices on Plates, Shapes and Bars Further Deferred—Steel Production Holds at High Rate

THE steel market has lost some of the momentum that carried production and prices sharply upward in the first two months of the year. Ingot output continues at a high rate, but there has been a shrinkage in new business, which is not uncommon following a period of heavy buying, and recent price advances have been proportionately less effective. In fact, a less uncompromising attitude toward prices on the part of the mills is interpreted as indicating their growing concern over the duration of the present high rate of operations.

The average daily output of ingots in February, at 160,591 tons, was unusually heavy, being the fourth highest rate ever reached and coming within 3.6 per cent of the record made in March, 1927. So far this month there has been no recession from the February rate, and it is now conceded that production for the 31 days may match that of March a year ago. Steel Corporation plants continue to operate at 90 per cent of ingot capacity, and independents are probably averaging somewhat better than 80 per cent, as a result of heavier output in the Youngstown district.

At Chicago the tendency is definitely in the direction of further increases in production, since buyers are specifying heavily against expiring contracts written at lower prices than now prevail. Shipping orders there, which were 20 per cent heavier than in the preceding week, were the fourth largest since 1925. Mill schedules are so well filled that deliveries, of necessity, will lap over into the second quarter.

Specifications, particularly for automobile steel, have also shown a gain at Cleveland. In the Pittsburgh and Philadelphia districts shipping orders for plates, shapes and bars are lagging and there is correspondingly less insistence on advanced prices. Buyers generally have been permitted to cover for second quarter at 1.85c., base Pittsburgh, or \$1 a ton below the recent advance, and many of them still have considerable tonnage due them on first quarter contracts at 1.80c., possibly enough to supply their April requirements. The test of the advance to 1.85c., let alone the later one to 1.90c., may not come for another month.

Makers of cold-finished steel bars have withdrawn an advance of \$2 a ton, announced early last month, and are continuing first quarter prices of 2.20c. per lb., Pittsburgh or Chicago, on second quarter business. Producers of wire nails, who raised prices and revised extras late last year, are being undersold, in some instances, by distributors who stocked more heavily than consuming demand warranted. Another factor for weakness in nails is the fact that mill shipments against low-priced con-

tracts have not yet been completed. Unsatisfactory demand for pipe continues to be reflected in price irregularities.

Sheet prices, on the other hand, appear to have held their advance, although some shading on the galvanized finish is reported in northern Ohio. However, sheet and strip steel buyers, including the automobile companies, are showing little interest in second quarter contracts. Meanwhile, sheet mill operations for the country average 88 per cent of capacity, but backlogs are being reduced. Unfilled orders of independent mills at the end of February amounted to 667,054 tons, a loss of 27,143 tons in the month. Sales in February were at the rate of 79½ per cent of capacity, as against an output of 98.7 per cent.

This showing is regarded as a truer reflection of the current trend in the steel industry than the unfilled orders of the Steel Corporation as of Feb. 29, which, contrary to expectations, showed an increase of 122,242 tons. This gain, however, is believed to have been due in large part to one or two installments on running contracts for material apart from railroad, automobile or building steel.

Alloy steel bars have been placed on a common base of \$2.65 per 100 lb., f.o.b. mill, with a schedule of alloy differentials for various grades. Changes in the prices of given alloys will be reflected in the differentials for the alloy steels affected, while general fluctuations of the steel market will show in the base price.

Among steel consuming lines, the automobile industry is conspicuous for its expanding operations. Railroad buying of rails has been virtually completed, but orders for track supplies at Chicago totaled 8000 tons for the week. The use of track accessories, particularly tie plates, has been increasing rapidly in recent years. Production of tie plates in 1926, at 608,878 tons, showed a gain of 100,000 tons over the preceding year and nearly 350,000 tons over the output of 1920.

Railroad car buying is still below expectations, but prospects have been brightened by the appearance of inquiries for 1000 automobile car bodies for the Chicago & North Western, 425 cars for the Southern Pacific and 192 for the Detroit, Toledo & Shore Line.

Two aqueducts to be built near Oakland, Cal., will require 8000 tons of steel pipe or 25,000 tons of cast iron pipe. Other construction work includes 41 Mississippi River barges, for which 4800 tons of steel was ordered, and a building at Ford City, Pa., calling for 5000 tons.

For oil storage tanks, orders have been received by Chicago mills for 15,500 tons of plates, and several new developments running into good-sized tonnage are taking form.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At Date, One Week, One Month, and One Year Previous

| Pig Iron, Per Gross Ton: | Mar. 13, 1928 | Mar. 6, 1928 | Feb. 14, 1928 | Mar. 15, 1927 |
|------------------------------|------------------|-----------------|------------------|------------------|
| No. 2, fdy., Philadelphia... | \$20.76 | \$20.76 | \$20.76 | \$21.76 |
| No. 2, Valley furnace..... | 17.25 | 17.25 | 17.25 | 18.50 |
| No. 2, Southern, Cin'ti.... | 19.69 | 19.69 | 19.69 | 21.69 |
| No. 2, Birmingham..... | 16.00 | 16.00 | 16.00 | 18.00 |
| No. 2 foundry, Chicago*.... | 18.50 | 18.50 | 18.50 | 20.00 |
| Basic, del'd eastern Pa.... | 19.50 | 19.50 | 19.50 | 20.75 |
| Basic, Valley furnace..... | 17.00 | 17.00 | 17.00 | 18.50 |
| Valley Bessemer, del'd P'gh | 19.26 | 19.26 | 19.26 | 21.26 |
| Malleable, Chicago*..... | 18.50 | 18.50 | 18.50 | 20.00 |
| Malleable, Valley..... | 17.25 | 17.25 | 17.25 | 18.50 |
| Gray forge, Pittsburgh.... | 18.51 | 18.51 | 18.51 | 19.76 |
| L. S. charcoal, Chicago.... | 27.04 | 27.04 | 27.04 | 27.04 |
| Ferromanganese, furnace... | 100.00 | 100.00 | 100.00 | 100.00 |

Rails, Billets, etc., Per Gross Ton:

| | | | | |
|-------------------------------|---------|---------|---------|---------|
| O.-h. rails, heavy, at mill. | \$43.00 | \$43.00 | \$43.00 | \$43.00 |
| Light rails at mill..... | 36.00 | 36.00 | 36.00 | 36.00 |
| Bess. billets, Pittsburgh... | 33.00 | 33.00 | 33.00 | 34.00 |
| O.-h. billets, Pittsburgh... | 33.00 | 33.00 | 33.00 | 34.00 |
| O.-h. sheet bars, P'gh.... | 34.00 | 34.00 | 34.00 | 34.00 |
| Forging billets, P'gh.... | 38.00 | 38.00 | 38.00 | 40.00 |
| O.-h. billets, Phila..... | 38.30 | 38.30 | 38.30 | 38.30 |
| Wire rods, Pittsburgh.... | 44.00 | 44.00 | 42.00 | 43.00 |
| | Cents | Cents | Cents | Cents |
| Skelp, grvd. steel, P'gh, lb. | 1.85 | 1.85 | 1.85 | 1.90 |

Finished Iron and Steel,

| Per Lb. to Large Buyers: | Cents | Cents | Cents | Cents |
|----------------------------|-------|-------|-------|-------|
| Iron bars, Philadelphia... | 2.12 | 2.12 | 2.12 | 2.12 |
| Iron bars, Chicago..... | 1.90 | 1.90 | 1.90 | 2.00 |
| Steel bars, Pittsburgh... | 1.85 | 1.85 | 1.85 | 1.90 |
| Steel bars, Chicago..... | 1.95 | 1.95 | 1.95 | 2.00 |
| Steel bars, New York..... | 2.19 | 2.19 | 2.19 | 2.24 |
| Tank plates, Pittsburgh... | 1.85 | 1.85 | 1.85 | 1.85 |
| Tank plates, Chicago..... | 1.95 | 1.95 | 1.95 | 2.00 |
| Tank plates, New York.... | 2.17½ | 2.17½ | 2.17½ | 2.19 |
| Beams, Pittsburgh..... | 1.85 | 1.85 | 1.85 | 1.90 |
| Beams, Chicago..... | 1.95 | 1.95 | 1.95 | 2.00 |
| Beams, New York..... | 2.14½ | 2.14½ | 2.14½ | 2.19 |
| Steel hoops, Pittsburgh... | 2.20 | 2.20 | 2.20 | 2.30 |

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

| Sheets, Nails and Wire, Per Lb. to Large Buyers: | Mar. 13, 1928 | Mar. 6, 1928 | Feb. 14, 1928 | Mar. 15, 1927 |
|--|------------------|-----------------|------------------|------------------|
| Sheets, black, No. 24, P'gh | 2.90 | 2.90 | 2.90 | 2.75 |
| Sheets, black, No. 24, Chi- | | | | |
| cago dist. mill..... | 3.00 | 3.00 | 3.00 | 2.95 |
| Sheets, galv., No. 24, P'gh | 3.65 | 3.65 | 3.65 | 3.65 |
| Sheets, galv., No. 24, Chi- | | | | |
| cago dist. mill..... | 3.85 | 3.85 | 3.85 | 3.85 |
| Sheets, blue, 9 & 10, P'gh. | 2.10 | 2.10 | 2.10 | 2.20 |
| Sheets, blue, 9 & 10, Chi- | | | | |
| cago dist. mill..... | 2.20 | 2.20 | 2.20 | 2.30 |
| Wire nails, Pittsburgh.... | 2.65 | 2.65 | 2.65 | 2.55 |
| Wire nails, Chicago dist. | | | | |
| mill..... | 2.70 | 2.70 | 2.70 | 2.60 |
| Plain wire, Pittsburgh.... | 2.50 | 2.50 | 2.50 | 2.40 |
| Plain wire, Chicago dist. | | | | |
| mill..... | 2.55 | 2.55 | 2.55 | 2.45 |
| Barbed wire, galv., P'gh.. | 3.35 | 3.35 | 3.35 | 3.25 |
| Barbed wire, galv., Chi- | | | | |
| cago dist. mill..... | 3.40 | 3.40 | 3.40 | 3.30 |
| Tin plate, 100 lb. box, P'gh | \$5.25 | \$5.25 | \$5.25 | \$5.50 |

Old Material, Per Gross Ton:

| | | | | |
|-----------------------------|---------|---------|---------|---------|
| Heavy melting steel, P'gh. | \$14.75 | \$14.75 | \$15.00 | \$16.75 |
| Heavy melting steel, Phila. | 13.50 | 13.50 | 13.50 | 14.50 |
| Heavy melting steel, Ch'go | 12.75 | 12.75 | 12.50 | 12.75 |
| Carwheels, Chicago..... | 14.00 | 14.00 | 14.00 | 15.00 |
| Carwheels, Philadelphia... | 15.50 | 15.50 | 15.50 | 16.00 |
| No. 1 cast, Pittsburgh.... | 14.50 | 14.50 | 14.50 | 16.00 |
| No. 1 cast, Philadelphia... | 16.00 | 16.00 | 16.00 | 17.00 |
| No. 1 cast, Ch'go (net ton) | 14.50 | 14.50 | 14.50 | 16.50 |
| No. 1 RR. wrot. Phila.... | 15.00 | 15.00 | 15.00 | 17.00 |
| No. 1 RR. wrot. Ch'go (net) | 11.00 | 11.00 | 11.00 | 12.00 |

Coke, Connellsville, Per Net Ton at Oven:

| | | | | |
|--------------------------|--------|--------|--------|--------|
| Furnace coke, prompt.... | \$2.60 | \$2.60 | \$2.75 | \$3.25 |
| Foundry coke, prompt.... | 3.75 | 3.75 | 3.75 | 4.50 |

Metals,

| Per Lb. to Large Buyers: | Cents | Cents | Cents | Cents |
|-------------------------------|--------|--------|--------|--------|
| Lake copper, New York... | 14.25 | 14.25 | 14.25 | 13.50 |
| Electrolytic copper, refinery | 14.00 | 14.00 | 13.87½ | 13.12½ |
| Zinc, St. Louis..... | 5.05 | 5.50 | 5.60 | 6.75 |
| Zinc, New York..... | 6.00 | 5.85 | 5.95 | 7.10 |
| Lead, St. Louis..... | 5.82½ | 5.75 | 6.12½ | 7.40 |
| Lead, New York..... | 6.00 | 6.00 | 6.35 | 7.65 |
| Tin (Straits), New York... | 50.12½ | 51.62½ | 51.87½ | 69.50 |
| Antimony (Asiatic), N. Y. | 10.50 | 10.25 | 11.00 | 12.25 |

Pittsburgh

Some Steel Price Weakness Develops— Output Averages 80 Per Cent

PITTSBURGH, March 13.—Major developments of interest in the market this week have to do chiefly with prices, and the showing has not been all on the side of strength. Makers of cold-finished steel bars have cancelled the advance of \$2 per ton announced early last month and are continuing first quarter contract prices on second quarter business. There is lack of evidence that more than 1.85c. has been done on second quarter contracts for bars, plates and shapes, as against 1.90c., announced as effective Feb. 21 last, and there is also lack of any definite signs that manufacturers will cancel portions of first quarter contract tonnages carrying 1.80c. which remain unspecified at the end of this month. It develops that all of the low-priced contracts for nails entered late last year have not yet been completed, and the advances made in strips do not yet mean much in actual performance, since buyers are covered at low prices to the end of this month and will be able to carry these low prices at least through April, by specifying in the next few weeks, and even longer, unless makers insist upon shipping orders, with cancellation as the alternative. So far as the test has applied, sheet prices appear to have held their advance. Pipe prices are easy.

The volume of specifications and the rate of steel production remain satisfactory, but it is becoming plainer that the demand lacks the momentum of a few weeks ago, and whatever change there may be in the

attitude of the mills on prices without doubt springs from the belief that there is not enough business to give all producers in this district a full or relatively full operation and from the fear that a too firm insistence on the advanced prices will be at the expense of orders. The weakness in prices of the primary materials has not been helpful to the advance in steel prices. Pig iron and scrap prices have not been as low in years as now.

Ingot production for the Greater Pittsburgh district, due to a high rate in the Youngstown district, where heavy sheet specifications make increased production essential and a high rate among the Steel Corporation units, is at least 80 per cent of capacity. The Steel Corporation is doing better both in orders and production than the independents. Activity is still lacking in pig iron, scrap and coal and coke. In these products prices still favor buyers.

Pig Iron.—A Pittsburgh district sheet steel manufacturer is reported to be getting prices on a round lot of basic iron and on a smaller lot of Bessemer iron for its steel foundry, but interest in the market on the part of other melters does not amount to much. It is doubtful if merchant producers will get any of the business in the steel-making irons because they are all located in the Valleys with a freight charge to Pittsburgh of \$1.76 per ton as against \$1.13 to \$1.26, the rates from Pittsburgh district steel plants having surplus iron to sell. Thus, with the f.o.b. furnace prices the same, the nearby furnaces would have the advantage of lower delivered prices. Valley furnace prices are substantially where they have been for several months, but they are purely nominal, notably on basic iron. Recent transactions in steel-making iron have been merely

sales by one steel company to another, and in not a few instances the seller conceded more than the freight advantage. It is probable that if Valley producers wanted business in the Pittsburgh district they would have to go to \$16, furnace, to get it. On foundry iron \$17.25, Valley furnace, for No. 2 is the usual price, but it is not the absolute minimum, and there are instances of price shading on Bessemer iron. The present merchant production added to the steel company's surplus means a supply too great for consumption and there is too much selling pressure for prices to develop strength. The Carnegie Steel Co. has taken off one of its Carrie furnaces, but the Youngstown Sheet & Tube Co. has put on a furnace at Hubbard, Ohio.

Prices per gross ton, f.o.b. Valley furnace:

| | |
|----------------------------------|---------|
| Basic | \$17.00 |
| Bessemer | 17.50 |
| Gray forge | 16.75 |
| No. 2 foundry | 17.25 |
| No. 3 foundry | 16.75 |
| Malleable | 17.25 |
| Low phosphorus, copper free..... | 27.00 |

Freight rate to the Pittsburgh or Cleveland district, \$1.76.

Ferroalloys.—Steel makers' reserves of ferromanganese appear to be getting low, as their specifications call for very prompt shipment. A free movement of spiegeleisen on contracts is noted also, and high grade ferrosilicon is moving well. New business amounts to little.

Fluorspar.—While most producers are quoting \$15, f.o.b. mines, for gravel spar, that price is still subject to concessions of as much as 50c. a ton. Producers say there is a loss of at least a dollar a ton in sales at present prices, and an advance to \$16 is said to be under consideration.

Semi-Finished Steel.—There is a steady movement of billets, slabs and sheet bars to sheet, strip and tin plate companies which depend on outside sources for their crude steel, but the open market does not register this activity because most buyers are not sending out inquiries as they formerly did. No change in prices is reported. Pipe skelp is going rather slowly because of relatively light pipe mill operations. Wire rod buyers are not rushing to cover for second quarter tonnages at the present price of \$44, base Pittsburgh or Cleveland, as that price is \$4 a ton above the ruling figure on this quarter's contract tonnage.

Bars, Plates and Shapes.—The market does not appear to have advanced beyond 1.85c., base Pittsburgh. Buyers are generally covered for second quarter at that price, but they still have considerable tonnage due them on first quarter contracts at 1.80c., which perhaps will be sufficient to supply their April requirements. Therefore the test of 1.85c. may not come for another month. Not much variation is noted in the rate of mill shipments, but specifications with most makers are running lighter than deliveries. Cold-finished steel bar makers are ordering hot-rolled bars less freely in keeping with lighter releases for their product. Plates are helped by river craft business, but the smallness of railroad

car and of pipe business leaves plenty of open capacity. Structural steel inquiry is good, but comes largely from points outside the immediate Pittsburgh district. Competition for medium and small jobs is sharp because the smaller fabricating companies are short of orders.

Rails and Track Supplies.—Track fastenings are beginning to move on old orders, but new business is negligible and probably will remain so until track laying is on a heavier scale. The roads are taking out standard-section rails steadily. Light section rails are slow.

Wire Products.—The movement of nails suffers now from the fact that January shipments of most producers were so heavy that distributors' stocks increased more rapidly than the consuming demand and these stocks still are ample without much new buying. Some jobbers who bought late last year at the then existing prices of around \$2.45, base, per keg, Pittsburgh, and the old card of extras, have been underselling the mills, since with the application of the new extras they have a good margin of profit at well under the present mill base. It also develops that all mills have not yet completed orders taken late last year for delivery at mill convenience. Specifications on contracts for other wire products are coming in steadily and in good volume, but second quarter contracting is not active.

Tubular Goods.—The West Texas Gas Co., subsidiary of the Prairie Oil & Gas Co., has divided an order for 154 miles of 3-in., 4-in., 6-in., 8-in. and 10-in. line pipe between a Pittsburgh district and an Eastern mill. This order and a slightly better demand for butt weld pipe are the interesting developments of the week. Oil country goods still are dull and neither the Monroe-St. Louis nor the Amarillo-Kansas City gas pipe lines has reached the quoting stage. It is believed the former is nearer the mills than the latter. Price irregularity continues.

Sheets.—There has been no let-down in the specifications for sheets and there is an operation of independent capacity of approximately 90 per cent, while the American Sheet & Tin Plate Co. last week produced between 80 and 85 per cent of capacity. This would indicate an operation for all makers of 88 per cent. Sheet prices appear to be somewhat firmer, as is indicated by fair-sized pick-up orders at the full quotations. Even a very firm market usually is marked by some deviations and the present is no exception.

Tin Plate.—There is little business beyond specifications on contracts. While tonnage releases are substantial, it is necessary for manufacturers who want to operate economically to roll against specifications yet to come. The mills are averaging an 80 per cent operation, but some are doing better than others and buyers are not finding much difficulty in getting prompt shipments.

Cold-Finished Steel Bars and Shafting.—Makers generally are taking second quarter contracts at 2.20c., base Pittsburgh or Chicago, the same price as on first quarter contracts. This represents a recession of \$2 a ton, as almost all makers went to 2.30c. several weeks

THE IRON AGE Composite Prices

Finished Steel March 13, 1928, 2.364c. a Lb.

| | |
|------------------------------|---------|
| One week ago..... | 2.364c. |
| One month ago..... | 2.364c. |
| One year ago..... | 2.367c. |
| 10-year pre-war average..... | 1.689c. |

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 86 per cent of the United States output of finished steel.

| | High | | Low | |
|------|----------|----------|----------|---------|
| 1928 | 2.364c., | Feb. 14: | 2.314c., | Jan. 3 |
| 1927 | 2.453c., | Jan. 4: | 2.293c., | Oct. 25 |
| 1926 | 2.453c., | Jan. 5: | 2.403c., | May 18 |
| 1925 | 2.560c., | Jan. 6: | 2.396c., | Aug. 18 |
| 1924 | 2.789c., | Jan. 15: | 2.460c., | Oct. 14 |
| 1923 | 2.824c., | Apr. 24: | 2.446c., | Jan. 2 |

Pig Iron March 13, 1928, \$17.75 a Gross Ton

| | |
|------------------------------|---------|
| One week ago..... | \$17.75 |
| One month ago..... | 17.75 |
| One year ago..... | 19.04 |
| 10-year pre-war average..... | 15.72 |

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

| | High | | Low | |
|------|----------|----------|----------|---------|
| 1928 | \$17.75, | Feb. 14: | \$17.54, | Jan. 3 |
| 1927 | 19.71, | Jan. 4: | 17.54, | Nov. 1 |
| 1926 | 21.54, | Jan. 5: | 19.46, | July 13 |
| 1925 | 22.50, | Jan. 13: | 18.96, | July 7 |
| 1924 | 22.88, | Feb. 26: | 19.21, | Nov. 3 |
| 1923 | 30.86, | Mar. 20: | 20.77, | Nov. 20 |

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

| | Base Per Lb. |
|---------------------------------|------------------|
| F.o.b. Pittsburgh mill..... | 1.85c. to 1.90c. |
| F.o.b. Chicago..... | 1.95c. to 2.10c. |
| Del'd Philadelphia..... | 2.17c. to 2.22c. |
| Del'd New York..... | 2.19c. to 2.24c. |
| Del'd Cleveland..... | 2.04c. to 2.09c. |
| F.o.b. Lackawanna..... | 1.85c. to 1.90c. |
| F.o.b. Birmingham..... | 1.95c. to 2.00c. |
| C.i.f. Pacific ports..... | 2.05c. to 2.15c. |
| F.o.b. San Francisco mills..... | 2.35c. to 2.40c. |

Billet Steel Reinforcing

| | |
|------------------------------|------------------|
| F.o.b. Pittsburgh mills..... | 1.90c. to 2.00c. |
| F.o.b. Birmingham..... | 2.05c. to 2.15c. |

Rail Steel

| | |
|--|------------------|
| F.o.b. mills east of Chicago district..... | 1.75c. |
| F.o.b. Chicago Heights mill..... | 1.80c. to 1.85c. |

Iron

| | |
|--------------------------------------|------------------|
| Common iron, f.o.b. Chicago..... | 1.90c. to 2.00c. |
| Refined iron, f.o.b. P'gh mills..... | 2.75c. |
| Common iron, del'd Philadelphia..... | 2.12c. |
| Common iron, del'd New York..... | 2.14c. |

Tank Plates

| | Base Per Lb. |
|------------------------------|--------------------|
| F.o.b. Pittsburgh mills..... | 1.85c. to 1.90c. |
| F.o.b. Chicago..... | 1.95c. to 2.10c. |
| F.o.b. Birmingham..... | 2.05c. to 2.15c. |
| Del'd Cleveland..... | 2.04c. to 2.09c. |
| Del'd Philadelphia..... | 2.10c. to 2.15c. |
| F.o.b. Coatesville..... | 2.00c. to 2.05c. |
| F.o.b. Sparrows Point..... | 2.00c. to 2.05c. |
| F.o.b. Lackawanna..... | 1.95c. to 2.00c. |
| Del'd New York..... | 2.17½c. to 2.22½c. |
| C.i.f. Pacific ports..... | 2.30c. |

Structural Shapes

| | Base Per Lb. |
|------------------------------|--------------------|
| F.o.b. Pittsburgh mills..... | 1.85c. to 1.90c. |
| F.o.b. Chicago..... | 1.95c. to 2.10c. |
| F.o.b. Birmingham..... | 2.05c. to 2.15c. |
| F.o.b. Lackawanna..... | 1.95c. to 2.00c. |
| F.o.b. Bethlehem..... | 2.00c. to 2.05c. |
| Del'd Cleveland..... | 2.04c. to 2.09c. |
| Del'd Philadelphia..... | 2.12c. to 2.18c. |
| Del'd New York..... | 2.14½c. to 2.19½c. |
| C.i.f. Pacific ports..... | 2.35c. |

Hot-Rolled Flats (Hoops, Bands and Strips)

| | Base Per Lb. |
|--------------------------------------|-------------------|
| Narrower than 3 in., P'gh..... | 2.20c. to 2.40c. |
| Wider than 3 in. to 6 in., P'gh..... | 2.10c. to 2.20c. |
| 6 in. and wider, P'gh..... | *1.90c. to 2.00c. |
| Narrower than 3 in., Chicago..... | 2.30c. to 2.50c. |
| From 3 to 6 in., Chicago..... | 2.20c. to 2.30c. |
| 6 in. and wider, Chicago..... | 2.00c. to 2.10c. |

*Mills follow plate or sheet prices according to gage on wider than 12 in.

Cold-Finished Steel

| | Base Per Lb. |
|--|-------------------|
| Bars, f.o.b. Pittsburgh mills..... | 2.20c. |
| Bars, f.o.b. Chicago..... | 2.20c. |
| Bars, Cleveland..... | 2.25c. |
| Shafting, ground, f.o.b. mill..... | *2.45c. to 2.90c. |
| Strips, under 12 in., 1 up to 3 tons, P'gh..... | 3.00c. to 3.15c. |
| Strips, under 12 in., 1 up to 3 tons, Cleveland..... | 3.00c. to 3.15c. |
| Strips, under 12 in., 1 up to 3 tons, del'd Chicago..... | 3.30c. to 3.45c. |
| Strips, under 12 in., 1 up to 3 tons, Worcester..... | 3.25c. to 3.40c. |

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

| | Base Per Keg |
|--------------------------|--------------|
| Wire nails..... | \$2.65 |
| Galvanized nails..... | 4.65 |
| Galvanized staples..... | 3.35 |
| Polished staples..... | 3.10 |
| Cement coated nails..... | 2.65 |

| | Base Per 100 Lb. |
|------------------------------------|------------------|
| Bright plain wire, No. 9 gage..... | \$2.50 |
| Annealed fence wire..... | 2.65 |
| Spring wire..... | 3.50 |
| Gal'd wire, No. 9..... | 3.10 |
| Barbed wire, gal'd..... | 3.35 |
| Barbed wire, painted..... | 3.10 |

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., (wire) mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

| | Base to Retailers Per Net Ton |
|------------------------------------|-------------------------------|
| F.o.b. Pittsburgh..... | \$65.00 |
| F.o.b. Cleveland..... | 65.00 |
| F.o.b. Anderson, Ind..... | 66.00 |
| F.o.b. Chicago district mills..... | 67.00 |
| F.o.b. Duluth..... | 68.00 |
| F.o.b. Birmingham..... | 68.00 |

Sheets

Blue Annealed

| | Base Per Lb. |
|---|------------------|
| Nos. 9 and 10, f.o.b. Pittsburgh..... | 2.10c. to 2.20c. |
| Nos. 9 and 10, f.o.b. Chicago dist. mill..... | 2.20c. to 2.30c. |
| Nos. 9 and 10, del'd Cleveland..... | 2.29c. |
| Nos. 9 and 10, del'd Philadelphia..... | 2.42c. to 2.52c. |
| Nos. 9 and 10, f.o.b. Birmingham..... | 2.25c. to 2.30c. |

Box Annealed, One Pass Cold Rolled

| | |
|--|--------|
| No. 24, f.o.b. Pittsburgh..... | 2.90c. |
| No. 24, f.o.b. Chicago dist. mill..... | 3.00c. |
| No. 24, del'd Cleveland..... | 3.09c. |
| No. 24, del'd Philadelphia..... | 3.22c. |
| No. 24, f.o.b. Birmingham..... | 3.05c. |

Metal Furniture Sheets

| | |
|---|--------|
| No. 24, f.o.b. Pittsburgh, A grade..... | 4.05c. |
| No. 24, f.o.b. Pittsburgh, B grade..... | 3.85c. |

Galvanized

| | |
|--|------------------|
| No. 24, f.o.b. Pittsburgh..... | 3.65c. to 3.75c. |
| No. 24, f.o.b. Chicago dist. mill..... | 3.85c. |
| No. 24, del'd Cleveland..... | 3.84c. to 3.94c. |
| No. 24, del'd Philadelphia..... | 4.07c. |
| No. 24, f.o.b. Birmingham..... | 3.90c. |

Tin Mill Black Plate

| | |
|--|--------|
| No. 28, f.o.b. Pittsburgh..... | 3.00c. |
| No. 28, f.o.b. Chicago dist. mill..... | 3.10c. |

Automobile Body Sheets

| | |
|--------------------------------|--------|
| No. 20, f.o.b. Pittsburgh..... | 4.15c. |
|--------------------------------|--------|

Long Ternes

| | |
|--|--------|
| No. 24, 8-lb. coating, f.o.b. mill primes..... | 4.10c. |
|--|--------|

Tin Plate

Per Base Box

| | |
|--|--------|
| Standard cokes, f.o.b. P'gh district mills..... | \$5.25 |
| Standard cokes, f.o.b. Gary and Elwood, Ind..... | 5.35 |

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per package, 20 x 28 in.)

| | |
|----------------------------|-----------------------------|
| 8-lb. coating I.C. \$11.20 | 25-lb. coating I.C. \$16.70 |
| 15-lb. coating I.C. 14.00 | 30-lb. coating I.C. 17.75 |
| 20-lb. coating I.C. 15.30 | 40-lb. coating I.C. 19.85 |

Alloy Steel Bars

(F.o.b. Pittsburgh, Chicago or Ohio mill.)

| S.A.E. Series Numbers | Per 100 Lb. |
|--|-------------|
| 2000 (½% Nickel)..... | \$2.90 |
| 2100 (1¼% Nickel)..... | 3.20 |
| 2300 (3¼% Nickel)..... | 4.15 |
| 2500 (5% Nickel)..... | 4.90 |
| 3100 Nickel Chromium..... | 3.20 |
| 3200 Nickel Chromium..... | 3.65 |
| 3300 Nickel Chromium..... | 6.45 |
| 3400 Nickel Chromium..... | 5.85 |
| 4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)..... | 3.15 |
| 4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)..... | 3.35 |
| 4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel)..... | 3.70 |
| 5100 Chromium Steel (0.60 to 0.90 Chrome)..... | 3.00 |
| 5100 Chromium Steel (0.80 to 1.10 Chrome)..... | 3.10 |
| 5100 Chromium Spring Steel..... | 2.85 |
| 6100 Chromium Vanadium Bars..... | 3.85 |
| 6100 Chromium Vanadium Spring Steel..... | 3.60 |
| 9250 Silicon Manganese Spring Steel..... | 2.90 |
| Chrome Nickel Vanadium..... | 4.15 |
| Carbon Vanadium..... | 3.60 |

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½ in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

Slabs with sectional area of 16 in. or over carry the billet price; slabs with sectional area of 12 in. to 16 in. carry a \$5 extra above the billet price and slabs with a sectional area under 12 in. carry the bar price.

Band sizes are 40c. per 100 lb. higher.

Rails

Per Gross Ton

| | |
|--|---------|
| Standard, f.o.b. mill..... | \$43.00 |
| Light (from billets), f.o.b. mill..... | 36.00 |
| Light (from rail steel), f.o.b. mill..... | 34.00 |
| Light (from billets), f.o.b. Ch'go mill..... | 36.00 |

Track Equipment

Base Per 100 Lb.

| | |
|--|----------------------|
| Spikes, ½ in. and larger..... | \$2.70 to \$2.80 |
| Spikes, ½ in. and smaller..... | 2.70 to 2.80 |
| Spikes, boat and barge..... | 2.90 to 3.00 |
| Tie plates, steel..... | 2.15 |
| Angle, bars..... | 2.75 |
| Track bolts, to steam railroads..... | 3.80 to 4.90 |
| Track bolts, to jobbers, all sizes, per 100 count..... | 70 per cent off list |

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

| Butt Weld | | | Iron | | |
|----------------|-------|-------|--------------|-------|-------|
| Steel | Black | Galv. | Inches | Black | Galv. |
| 1½..... | 45 | 19½ | ¼ to ¾..... | +11 | +39 |
| 1½ to 2..... | 51 | 25½ | ¾..... | 22 | 2 |
| 2..... | 56 | 42½ | ¾..... | 28 | 11 |
| 2½..... | 60 | 48½ | 1 to 1½..... | 30 | 13 |
| 1 to 3..... | 62 | 50½ | | | |
| 2..... | 55 | 43½ | 2..... | 23 | 7 |
| 2½ to 6..... | 59 | 47½ | 2½..... | 26 | 11 |
| 7 and 8..... | 56 | 43½ | 3 to 6..... | 28 | 13 |
| 9 and 10..... | 54 | 41½ | 7 to 12..... | 26 | 11 |
| 11 and 12..... | 53 | 40½ | | | |

Butt Weld, extra strong, plain ends

| | | | | | |
|--------------|----|-----|--------------|-----|-----|
| 1½..... | 41 | 24½ | ¼ to ¾..... | +19 | +54 |
| 1½ to 2..... | 47 | 30½ | ¾..... | 21 | 17 |
| 2..... | 53 | 42½ | ¾..... | 28 | 12 |
| 2½..... | 58 | 47½ | 1 to 1½..... | 30 | 14 |
| 1 to 1½..... | 60 | 49½ | | | |
| 2 to 3..... | 61 | 50½ | | | |

Lap Weld, extra strong, plain ends

| | | | | | |
|----------------|----|-----|--------------|----|----|
| 2..... | 53 | 42½ | 2..... | 23 | 9 |
| 2½ to 4..... | 57 | 46½ | 2½ to 4..... | 29 | 15 |
| 4½ to 6..... | 56 | 45½ | 4½ to 6..... | 28 | 14 |
| 7 to 8..... | 52 | 39½ | 7 to 8..... | 21 | 15 |
| 9 and 10..... | 45 | 32½ | 9 to 12..... | 16 | 2 |
| 11 and 12..... | 44 | 31½ | | | |

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5 and 2½ points, and on galvanized by 1½ points, with supplementary discount of 5 and 2½ points. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2½ points.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

| Lap Welded Steel | Charcoal Iron |
|------------------|---------------|
| 2 to 2½ in..... | 27 |
| 2½ to 3 in..... | 37 |
| 3 in..... | 40 |
| 3½ to 4 in..... | 42½ |
| 4 to 13 in..... | 46 |
| 1½ in..... | 18 |
| 1¾ to 1½ in..... | 8 |
| 2 to 2½ in..... | 2 |
| 2½ to 3 in..... | 7 |
| 3½ to 4 in..... | 9 |

Beyond the above discounts, 7 fives extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

| Cold Drawn | |
|---------------------|----|
| 1 in..... | 60 |
| 1½ to 1½ in..... | 52 |
| 1¾ in..... | 36 |
| 2 to 2½ in..... | 31 |
| 2½ to 2½ in..... | 39 |
| 3 in..... | 45 |
| 3½ to 3½ in..... | 47 |
| 4 in..... | 50 |
| 4½, 5 and 6 in..... | 45 |

Hot Rolled

| | |
|---------------------|----|
| 2 and 2½ in..... | 37 |
| 2½ and 2½ in..... | 45 |
| 3 in..... | 51 |
| 3½ and 3½ in..... | 53 |
| 4 in..... | 56 |
| 4½, 5 and 6 in..... | 51 |

Less carloads, 4 points less. Add \$8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Per Cent Off List

| | |
|---|----|
| Carbon, 0.10% to 0.30%, base..... | 55 |
| Carbon, 0.30% to 0.40%, base..... | 50 |
| Plus differentials for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above. | |

ago, and it was expected that price would be named for the second quarter. The higher price, however, brought considerable resistance, particularly in Detroit, where buyers pointed out that they paid an advance on cold-finished bars for first quarter and had not paid higher for any other grades of steel.

Hot-Rolled Flats.—Consumers are specifying freely against lower-priced first quarter orders, but are not exhausting their coverages, and unless makers cancel unspecified tonnage on March 31 it will be at least another month before a real test of present prices will come. There has been some second quarter contracting at the advanced prices, but it is early for specifications against them.

Cold-Rolled Strips.—The advance of more than a month ago to 2.90c., base, for lots of 3 tons or more and to 3.15c., base, for lots of 1 to 3 tons, is not yet fully established, because of liberal coverage of consumers for this quarter. New requirements are not large enough to provide a test of the recent advance. Business both for prompt and second quarter shipment has been done at the higher levels, but it has been chiefly with buyers who take small lots and whose quality requirements are exacting.

Bolts, Nuts and Rivets.—Business in bolts and nuts is better than it was during the first five or six weeks of the year, but local producers are not fully engaged. Makers' prices are firm, but in the secondary market some irregularity exists, with Cleveland jobbers taking business here at less than the prices of local jobbers. Most rivet makers have gone along with the advances recently announced, but small wagon and tinnery rivets are obtainable at less than the quoted discounts.

Coke and Coal.—Only one Valley furnace now active is uncovered on second quarter requirements of coke. For that period coke producers are asking from \$2.85 to \$3, but \$2.75 seems to have been the basis of most of the business now on the books and will probably be the basis of a contract now pending which amounts to approximately 16,000 tons a month. The market for spot furnace coke is limited and prices are largely of buyers' making. There is no change in foundry coke prices. The coal market shows no more life or strength than it has for some time. Some yearly contracts to run from April 1 next, are being written, but the prices indicate that operators are anxious to keep their mines active.

Old Material.—On the buying side there is little interest in the market except on the part of dealers, who, not being pressed for deliveries, are not taking hold hurriedly or without an effort to purchase against their sales at prices that mean a profit. It is commonly said

that if any consumer wanted a sizable tonnage of heavy melting steel the price would not be under \$15, but, in the absence of any such inquiry, this is merely conjecture. Dealers are not paying much higher than \$14.75 for material to be applied against old orders of exacting melters. Machine shop turnings have dropped further, having sold at as low as \$10; supplies out of Detroit are large, and there is not the usual market in Youngstown and to the west. Blast furnace scrap also is weaker, because consumptive demand is so light and dealers have been able to get supplies against short orders so readily that they have reduced their bids. There is little activity in the foundry grades, and on railroad specialties prices are at least 25c. a ton lower.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

Basic Open-Hearth Furnace Grades:

| | |
|-----------------------------------|--------------------|
| Heavy melting steel..... | \$14.50 to \$15.00 |
| Scrap rails | 14.00 to 14.50 |
| Compressed sheet steel | 14.00 to 14.50 |
| Bundled sheets, sides and ends... | 13.00 to 13.50 |
| Cast iron carwheels | 14.50 to 15.00 |
| Sheet bar crops, ordinary..... | 15.00 to 15.50 |
| Heavy breakable cast..... | 13.00 to 13.50 |
| No. 2 railroad wrought | 15.00 to 15.50 |
| Heavy steel axle turnings..... | 13.00 to 13.50 |
| Machine shop turnings..... | 10.00 to 10.50 |

Acid Open-Hearth Furnace Grades:

| | |
|--|----------------|
| Railroad knuckles and couplers.. | 16.50 to 17.00 |
| Railroad coil and leaf springs... | 16.50 to 17.00 |
| Rolled steel wheels..... | 16.50 to 17.00 |
| Low phosphorus billet and bloom ends | 18.50 to 19.00 |
| Low phosphorus, mill plate..... | 17.50 to 18.00 |
| Low phosphorus, light grade..... | 16.50 to 17.00 |
| Low phosphorus sheet bar crops.. | 17.50 to 18.00 |
| Heavy steel axle turnings..... | 13.00 to 13.50 |

Electric Furnace Grades:

| | |
|--------------------------------|----------------|
| Low phosphorus punchings..... | 16.50 to 17.00 |
| Heavy steel axle turnings..... | 13.00 to 13.50 |

Blast Furnace Grades:

| | |
|-----------------------------------|----------------|
| Short shoveling steel turnings... | 10.50 to 11.00 |
| Short mixed borings and turnings | 10.50 to 11.00 |
| Cast iron borings..... | 10.50 to 11.00 |
| No. 2 busheling..... | 9.50 to 10.00 |

Rolling Mill Grades:

| | |
|------------------------------|----------------|
| Steel car axles | 18.00 to 19.00 |
| No. 1 railroad wrought | 11.00 to 11.50 |
| Sheet bar crops | 17.00 to 17.50 |

Cupola Grades:

| | |
|----------------------------|----------------|
| No. 1 cast | 14.50 to 15.00 |
| Rails 3 ft. and under..... | 15.00 to 15.25 |

Malleable Grades:

| | |
|--------------------|----------------|
| Railroad | 14.50 to 15.00 |
| Industrial | 14.00 to 14.50 |
| Agricultural | 13.50 to 14.00 |

New Coast Company to Manufacture and Distribute Corrugated Sheets

LOS ANGELES, CAL., March 10.—J. E. Webster, E. B. Fish, John A. Lambie and others have organized the Superior Culvert & Flume Mfg. Co., capital \$100,000, with offices and factory at 2440 East Fifteenth Street, to manufacture and distribute corrugated culverts.

The Central Alloy Steel Corporation, Massillon, Ohio, has given the new company exclusive manufacturing and distributing rights for its Toncan molybdenum corrugated culverts in the States of California, Utah, Nevada, New Mexico and Arizona. In addition, a regular line of copper-bearing sheet steel culverts will be manufactured.

The first of the company's plants is now in operation at Union and Nineteenth Streets, Oakland, Cal., and the Los Angeles factory will be operating before April 1. Plants will also be established some time during this year in Phoenix, Ariz., and Salt Lake City, Utah.

The president of the company is J. E. Webster, one of the best known iron and steel men on the Pacific Coast. For some years he has been general manager of the Ducommun Corporation of Los Angeles, large distributor of steel and metal products. E. B. Fish is vice-president, John A. Lambie, secretary and manager, and Oliver P. Stewart, treasurer. The latter three men, all officers of the West Coast Pipe & Steel Co., Los Angeles, together with J. E. Webster and J. Overholtzer, compose the board of directors.

Warehouse Prices, f.o.b. Pittsburgh

| | Base per Lb. |
|---|------------------|
| Plates | 3.00c. |
| Structural shapes | 3.00c. |
| Soft steel bars and small shapes..... | 2.90c. |
| Reinforcing steel bars | 2.75c. |
| Cold-finished and screw stock— | |
| Rounds and hexagons..... | 3.60c. |
| Squares and flats | 4.10c. |
| Bands | 3.60c. |
| Hoops | 4.00c. to 4.50c. |
| Black sheets (No. 24 gage), 25 or more bundles | 3.65c. |
| Galvanized sheets (No. 24 gage), 25 or more bundles | 4.50c. |
| Blue annealed sheets (No. 10 gage), 25 or more sheets | 3.10c. |
| Galvanized corrugated sheets (No. 28 gage), per square | \$4.39 |
| Spikes, large | 3.30c. to 3.40c. |
| Small | 3.80c. to 5.25c. |
| Boat | 3.80c. |
| Track bolts, all sizes, per 100 count, 62 1/2 per cent off list | |
| Machine bolts, per 100 count, 62 1/2 per cent off list | |
| Carriage bolts, per 100 count, 62 1/2 per cent off list | |
| Nuts, all styles, per 100 count, 62 1/2 per cent off list | |
| Large rivets, base per 100 lb..... | \$3.50 |
| Wire, black soft annealed, base per 100 lb..... | \$3.00 to 3.10 |
| Wire, galvanized soft, base per 100 lb..... | 3.00 to 3.10 |
| Common wire nails, per keg.... | 3.00 |
| Cement coated nails, per keg.... | 3.05 |

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

Slabs

Wire Rods

| | Per Gross Ton |
|--|------------------|
| Rerolling, 4-in. and over..... | \$33.00 |
| Rerolling, under 4-in. to and including 1½ in..... | \$33.50 to 34.00 |
| Forging, ordinary..... | 38.00 to 39.00 |
| Forging, guaranteed..... | 43.00 to 44.00 |

| | Per Gross Ton |
|--------------------------------|---------------|
| 8 in. x 2 in. and larger..... | \$33.00 |
| Smaller than 8 in. x 2 in..... | 34.00 |

| | |
|--------------------------|--------------------------|
| | <i>Per Gross Ton</i> |
| *Common soft, base | \$44.00 |
| Screw stock | \$5.00 per ton over base |

Sheet Bars

| | |
|------------------------------|---------------|
| | Per Gross Ton |
| Open-hearth or Bessemer..... | \$34.00 |

| | |
|-----------------|------------------|
| | Per Lb. |
| Grooved | 1.85c. to 1.90c. |
| Sheared | 1.85c. to 1.90c. |
| Universal | 1.85c. to 1.90c. |

Prices of Raw Material

Ores

Ferromanganese

Fluxes and Refractories

| Lake Superior Ores, Delivered Lower Lake Ports | | Per Gross Ton |
|---|--|--------------------|
| Old range Bessemer, 51.50% iron..... | | \$4.55 |
| Old range non-Bessemer, 51.50% iron..... | | 4.40 |
| Mesabi Bessemer, 51.50% iron..... | | 4.40 |
| Mesabi non-Bessemer, 51.50% iron..... | | 4.25 |
| High phosphorus, 51.50% iron..... | | 4.15 |
| Foreign Ore, c.i.f. Philadelphia or Baltimore | | Per Unit |
| Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algeria..... | | 10.00 |
| Iron ore, Swedish, average 66% iron..... | | 9.25c. to 9.50c. |
| Manganese ore, washed, 52% manganese, from the Caucasus..... | | 39c. |
| Manganese ore, Brazilian, African or Indian, basis 50%..... | | 38c. to 39c. |
| Tungsten ore, high grade, per unit, in 60% concentrates..... | | \$10.25 to \$10.75 |
| | | Per Gross Ton |
| Chrome ore, 45 to 50% Cr ₂ O ₃ , crude, c.i.f. Atlantic seaboard..... | | \$22.00 to \$24.00 |
| | | Per Lb. |
| Molybdenum ore, 85% concentrates of MoS ₃ , delivered..... | | 50c. to 55c. |

| | Per Gross Ton |
|--|---------------|
| Domestic, 80%, furnace or seab'd..... | \$100.00 |
| Foreign, 80%, Atlantic or Gulf port, duty paid | 100.00 |

| Fluorspar | Per Net Ton |
|---|-------------|
| Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines | \$15.00 |
| No. 2 lump, Illinois and Kentucky mines | \$20.00 |
| Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.... | \$16.00 |
| Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines..... | \$32.50 |

Coke

| | <i>Per Net Ton</i> |
|---|--------------------|
| Furnace, f.o.b. Connellsville prompt | \$2.60 to \$2.75 |
| Foundry, f.o.b. Connellsville prompt | 3.75 to 4.50 |
| Foundry, by-products, Ch'go ovens | 9.00 |
| Foundry, by-product, New England, del'd | 11.50 |
| Foundry, by-product, Newark or Jersey City, delivered | 9.45 to 9.85 |
| Foundry, Birmingham | 5.00 |
| Foundry, by-products, St. Louis | 9.75 |

Coal

| | Per Net Ton |
|---|------------------|
| Mine run steam coal, f.o.b. W. Pa. mines | \$1.40 to \$1.80 |
| Mine run coking coal, f.o.b. W. Pa. mines | 1.50 to 1.75 |
| Gas coal, 3/4-in., f.o.b. Pa. mines... | 2.00 to 2.10 |
| Mine run gas coal, f.o.b. Pa. mines | 1.75 to 1.90 |
| Steam slack, f.o.b. W. Pa. mines... | 0.90 to 1.00 |
| Gas slack, f.o.b. W. Pa. mines... | 1.00 to 1.10 |

| Spiegeleisen | | Per Gross Ton Furnace |
|---------------------|-------|-----------------------|
| Domestic, 19 to 21% | ..... | \$31.00 to \$32.00 |
| Domestic, 16 to 19% | ..... | 29.00 |

| Electric Ferrosilicon | |
|--------------------------------|--------------------|
| <i>Per Gross Ton Delivered</i> | |
| 50% | \$83.50 to \$88.50 |
| 75% | 130.00 to 140.00 |

| <i>Per Gross Ton Furnace</i> | <i>Per Gross Ton Furnace</i> |
|----------------------------------|----------------------------------|
| 10% .....\$35.00 | 12% .....\$39.00 |
| 11% 37.00 | 14 to 16%..... 45.00 |

| Bessemer Ferrosilicon | |
|--------------------------------------|-------------------|
| F.o.b. Jackson County, Ohio, Furnace | |
| Per Gross Ton | Per Gross Ton |
| 10% \$30.00 | 12% \$34.00 |
| 11% 32.00 | |

| Silvery Iron | |
|--------------------------------------|----------------------|
| F.o.b. Jackson County, Ohio, Furnace | |
| <i>Per Gross Ton</i> | <i>Per Gross Ton</i> |
| 6¢ \$23.00 | 10¢ \$28.00 |
| 7¢ 24.00 | 11¢ 30.00 |
| 8¢ 25.00 | 12¢ 32.00 |
| 9¢ 26.00 | |

Other Ferroalloys

| | |
|--|------------------|
| Ferrotungsten, per lb. contained metal, feld. | 92c. to 95c. |
| Ferrochromium, 4 to 10% Cr. and up | 65 |
| to 70% Cr. per lb. contained Cr. delivered in carloads | 11.00c. |
| Ferrovanadium, per lb. contained vanadium, f.o.b. furnace | \$3.15 to \$3.65 |
| Ferrocobalt-titanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads | \$200.00 |
| Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn. base, per gross ton | \$91.00 |
| Ferrophosphorus, electric, 24%, f.o.b. Aniston, Ala., per gross ton | \$122.50 |

| Fire Clay | | |
|------------------------------|-----------------------|--------------------|
| | Per 1000 f.o.b. Works | |
| | First Quality | Second Quality |
| Pennsylvania .. | \$43.00 to \$46.00 | \$35.00 to \$38.00 |
| Maryland | 43.00 to 46.00 | 35.00 to 38.00 |
| New Jersey | 50.00 to 65.00 | — |
| Ohio | 43.00 to 46.00 | 35.00 to 38.00 |
| Kentucky | 43.00 to 46.00 | 35.00 to 38.00 |
| Missouri | 43.00 to 46.00 | 35.00 to 38.00 |
| Illinois | 43.00 to 46.00 | 35.00 to 38.00 |
| Ground fire clay, per ton | 7.00 | |

| Silica Brick | |
|------------------------------|-----------------|
| <i>Per 1000 f.o.b. Works</i> | |
| Pennsylvania | \$43.00 |
| Chicago | 52.00 |
| Birmingham | 50.00 |
| Silica clay, per ton..... | \$8.50 to 10.00 |

| Magnesite Brick | | <i>Per Net Ton</i> |
|---|--|--------------------|
| Standard sizes, f.o.b. Baltimore and Chester, Pa. | | \$65.00 |
| Grain magnesite, f.o.b. Baltimore and Chester, Pa. | | 40.00 |

| | | |
|---------------------|---------------------|--------------------|
| | Chrome Brick | <i>Per Net Ton</i> |
| Standard size | | \$45.00 |

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

Bolts and Nuts

Small Rivets

| Per 100 Pieces | |
|---|-----------------------------------|
| (F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago) | |
| | <i>Per Cent Off List</i> |
| †Machine bolts | 70 |
| †Carriage bolts | 70 |
| Lag bolts | 70 |
| Flow bolts, Nos. 1, 2, 3 and 7 heads..... | 70 |
| Hot-pressed nuts, blank or tapped, square..... | 70 |
| Hot-pressed nuts, blank or tapped, hexagons..... | 70 |
| C.p.c. and t. square or hex. nuts, blank or tapped | 70 |
| Washers* | 6.75c. to 6.50c. per lb. off list |

| | Per Cent Off List |
|--|-------------------|
| Semi-finished hexagon nuts | 70 |
| Semi-finished hexagon castellated nuts, S.A.E. | 70 |
| Stove bolts in packages, Pittsburgh. 80, 10 and 2 1/2 | |
| Stove bolts in packages, Chicago. .75, 20, 10 and 5 | |
| Stove bolts in bulk, Pittsburgh. | 80, 10 and 5 |
| Stove bolts in bulk, Chicago. .75, 20, 10, 5 and 2 1/2 | |
| Tire bolts | 60, 5 and 3 |

Discounts of 70 per cent off on bolts and nuts applied on carload business. For less than carload orders discounts of 55 to 60 per cent apply.

| Large Rivets | |
|-------------------------------------|------------------|
| (1/2-In. and Larger) | |
| | Base per 100 Lb. |
| F.o.b. Pittsburgh or Cleveland..... | \$2.96 |
| F.o.b. Chicago | 3.00 |

| (7/8-In. and Smaller) | |
|-------------------------|-------------------|
| | Per Cent Off List |
| F.o.b. Pittsburgh | 70 and 10 |
| F.o.b. Cleveland | 70 and 10 |
| F.o.b. Chicago | 70 and 10 to 70 |

Cap and Set Screws

(Freight allowed up to but not exceeding 50c.
per 100 lb. on lots of 200 lb. or more)

| | Per Cent Off List |
|--|-------------------|
| Milled cap screws..... | 80, 10 and 10 |
| Milled standard set screws, case hardened, | 80 and 10 |
| Milled headless set screws, cut thread..... | 80 |
| Upset hex. head cap screws, U.S.S. thread..... | 85 and 5 |
| Upset hex. cap screws, S.A.E. thread..... | 85 and 5 |
| Upset set screws..... | 80, 10 and 10 |
| Milled studs..... | 70 and 5 |

*F.o.b. Chicago, New York and Pittsburgh.

†Bolts with rolled thread up to and including 3/4 in. x 6 in. take 10 per cent lower list prices.

Chicago

Steel Specifications Heavy and Deliveries Will Extend Into Second Quarter

CHICAGO, March 13.—Mill schedules are so well filled to the end of this month that much tonnage now being specified against contracts will of necessity be delivered after the turn of the second quarter, even though such tonnage was written at prices lower than those now asked. It was originally the intention of producers to terminate at the end of March deliveries on business taken at 1.90c. and 1.95c., but there has been an effort to satisfy users' urgent demands, and this has resulted in frequent rearrangements of rolling schedules and delaying of shipments not immediately needed.

It is not to be doubted that many buyers are resisting recent advances in prices and are specifying ahead of actual requirements, and by so doing are building stocks which will postpone the establishing of higher quotations. This situation is reflected by steel specifications that are 20 per cent heavier than a week ago and are the fourth largest for any like period since 1925. In the meantime, forward contracting is only moderately active. Among structural awards is 2900 tons for the Robey Street viaduct, Chicago. Orders have been placed by the Rock Island for 36 passenger and baggage cars. Sellers of hot-rolled strip are accepting 1.95c. for heavy gages and in widths over 12 in.

Pig Iron.—Various estimates place second quarter iron now under contract at 70 per cent of the normal requirements of users in this district. New contracts are less numerous than last week, though the volume is considered satisfactory by sellers. Spot sales are increasing, having so far this month passed the total of like purchases in February. The trade takes this as an indication that first quarter contracts were conservative, but it may also mean that many buyers were doubtful of the business trend in the early months of the year and therefore were not willing to buy until better demand for foundry products was in sight. Furnace output is steady but is below shipments, affording producers an opportunity to reduce stocks built up during the winter months.

Prices per gross ton at Chicago:

| | |
|--|------------------|
| Northern No. 2 foundry, sil. 1.75 to 2.25 | \$18.50 |
| N'th'n No. 1 fdy., sil. 2.25 to 2.75 | 19.00 |
| Malleable, not over 2.25 sil. | 18.50 |
| High phosphorus | 18.50 |
| Lake Superior charcoal, averaging sil. 1.50 | 27.04 |
| Southern No. 2 fdy. (all rail) | 22.01 |
| Southern No. 2 (barge and rail) | 21.18 |
| Low phos., sil. 1 to 2 per cent, copper free | \$28.50 to 29.00 |
| Silvery, sil. 8 per cent. | 29.79 |
| Bessemer ferrosilicon, 14 to 15 per cent | 46.79 |

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnace, not including an average switching charge of 61c. per gross ton.

Ferroalloys.—Specifications for these commodities are large, but new buying is widely scattered and in car lots. A carload of ferromanganese has been sold at \$100, seaboard.

Prices delivered Chicago: 80 per cent ferromanganese, \$107.56; 50 per cent ferrosilicon, \$83.50 to \$87.50; spiegeleisen, 19 to 21 per cent, \$38.76 to \$39.76.

Plates.—Oil tank storage programs are developing rapidly and for the second week purchases of plates for that purpose have been heavy. In the last week 15,500 tons has been added to local makers' books. All of this tonnage is for delivery in the Southwest, principally Texas. Subjected to sharp competition from other steel producing centers, prices did not hold to the full 2c. quotation which producers are naming in and near Chicago. Inquiry for new oil storage projects is lacking but several new developments are taking form. Shipments against recent tankage material contracts have moved forward rapidly and orders received this week are for delivery at the earliest convenience of mills. Small tank manufacturers in this district are busy and it is noticeable that general merchandising of plate mill products is becoming more extended.

Plate business is well proportioned in accordance to capacity of sheared and universal mills. Of special interest to railroad equipment plants is an inquiry by the Chicago & North Western for 1000 automobile car bodies, and one from the Southern Pacific for 200 automobile cars and 175 oil cars. Orders are small but pending business is active. Buyers in many quarters are resisting the quotation at 2c. for second quarter delivery, but some tonnage has been sold at that price. *

Mill prices on plates per lb.: 1.95c., base Chicago.

Structural Material.—New business in structural material is not heavy, but local shops are well fortified by order books which have grown rapidly because of recent heavy tonnage awards. Foremost among outstanding inquiries is 6000 tons of bridge work for the Chicago & North Western. The Chicago Board of Trade has leased temporary quarters, and it is not improbable that its building program, calling for a 35-story structure, will soon take definite form. The American Bridge Co. is furnishing foundation steel for the Robey Street bridge approach, Chicago. The entire project will require about 3000 tons. Fresh inquiry is widely scattered. A timber mill building in Oregon will take 1000 tons and a high school for Great Falls, Mont., calls for 600 tons. Chicago prices at 2c. for structural material require further tests, though some business is being taken at that figure. Mill deliveries range from four to six weeks.

Mill prices on plain material per lb.: 1.95c. to 2.10c., base, Chicago.

Bars.—New buying in soft steel bars is about equal to shipments. Specifications are practically equal to last week, making this the fourth largest seven-day period since the close of 1925. Forgers are busy, and a steady volume of specifications emanates from bolt and rivet manufacturers. Farm implement plants remain active. Soft steel bar prices are fairly well established at 2c., Chicago. Demand for iron bars is larger, but it still far from taxes local mill capacity. Sellers of alloy steel bar established March 9 a base price of 2.65c. per lb., to which are added alloy differentials. Announcement of these prices inaugurates the opening of second quarter books. In adopting the new schedule producers plan to hold differentials subject to changes in prices of alloys, whereas the base price will fluctuate with the general market. Second quarter contracting for alloy bars is making progress but not at a rapid pace. Deliveries range from two to three weeks and mills are operating at close to capacity. New business in rail steel bars is not as large as the weekly average in February, and specifications also have dropped. Notwithstanding this change in the last week, total shipments of hard steel bars in the first two and one-half months of this year are well ahead of the corresponding period in 1927. Spot business is being taken at 1.80c., Chicago Heights mills, while sales for delivery after March 31 are being made at 1.85c.

Mill prices per lb.: Soft steel bars, 1.95c. to 2.10c., base, Chicago; common bar iron, 2.00c., base, Chicago; rail steel bars, 1.80c. to 1.85c., base, Chicago Heights mill.

Wire Products.—Indications are at hand that the peak of the spring demand for wire products has been reached. Producers already have adjusted operations downward about two points, or to a rate of 73 per cent of capacity. Orders from jobbers in the South are well sustained and some improvement is noted west of the Mississippi River and in the near Northwest, but business is lagging in the North Central States. Railroads are taking wire products in quantities which are normal for this time of the year. Orders from the manufacturing trade is steady. New business in nails is unusually dull because dealers have stocked more heavily than spring building activity warranted. Prices for wire and wire products are shown on page 761.

Rails and Track Supplies.—Miscellaneous track accessory orders for the week total 8000 tons. Inquiry is small, but requests for prices from several Western railroads are expected at an early date. Prices for steel tie plates are fairly steady at \$43 per ton. Several buyers have placed orders for iron tie plates. Light rail business is confined to carlot orders.

Cast Iron Pipe.—Not less than 7000 tons of cast iron pipe has been ordered in the last week. Contractors' lettings, including 1000 tons for Niles Center, Ill., total more than 5000 tons. The National Cast Iron Pipe Co. has taken 150 tons of 6-in. and 125 tons of 8-in. pipe for Appleton, Wis., and the United States Cast Iron Pipe & Foundry Co. has been awarded 150 tons of 8 and 12-in. pipe by Grosse Point Farms, Mich. Saginaw, Mich., has ordered 475 tons of 6 to 24-in. pipe from James B. Clow & Sons. Fresh inquiry includes 380 tons of 24-in. class B pipe for Springfield, Ill., 600 tons of 10-in. pipe for Painesville, Ohio, and 115 tons of 4 and 6-in. class C pipe for Alliance, Ohio. Buying by public utilities and railroads is light, but fresh inquiry from the latter is promising. Deliveries are now not far from 40 days. Prices are not changed from a week ago, though sentiment among producers is becoming stronger for a closer adherence to a price level near \$30, Birmingham, for 6-in. diameters and larger. This is indicated by the low bids at Columbus, Ohio, and at Berea, Ohio. The former were on 2000 tons of 6 to 16-in. pipe and the low bid was \$27.95, Birmingham. The lowest quotation at Berea was \$28.35, Birmingham, on 1100 tons.

Prices per net ton, delivered Chicago: Water pipe, 6-in. and over, \$35.20 to \$38.20; 4-in., \$39.20 to \$42.20; Class A and gas pipe, \$4 extra.

Bolts, Nuts and Rivets.—Second quarter contracting is rapidly getting under way and reports indicate that little resistance is being offered to recent advances in prices for small and large rivets and stove bolts. Specifications are a shade lighter, but as yet this situation has not affected output of these commodities.

Prices f.o.b. mill, per gross ton: Standard-section open-hearth and Bessemer rails, \$43; light rails, rolled from billets, \$36. Per Lb.: Standard railroad spikes, 2.80c.; track bolts with square nuts, 3.80c.; steel tie plates, 2.25c.; angle bars, 2.75c.

Cold-Finished Steel Bars.—Efforts to hold prices for this commodity at 2.30c. have failed, and books for second quarter have been opened at 2.20c. Contracting is slow, and specifications are in smaller volume than at the turn of the month.

Sheets.—Specifications for sheets to Chicago district mills are steady, and output remains at 90 per cent of capacity. Orders from the Southwest are more numerous and manufacturers of roofing and conductor pipe are taking larger quantities. Second quarter contracting is moderately active at present quotations.

Base prices per lb., delivered from mill in Chicago: No. 24 black, 3.05c.; No. 24 galvanized, 3.90c.; No. 10 blue annealed, 2.25c. to 2.35c. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Reinforcing Bars.—Many projects that have been before the trade for some time now give promise of developing into actual orders. Although in recent years cold weather has not deterred buying materially, it is apparent that with the last of the extreme weather

in sight many projects are becoming more active. State road contractors have placed fully 2000 tons of reinforcing bars. The bulk of this tonnage is in straight lengths and will be shipped directly from mills. Rail steel reinforcing bars are being quoted at 1.85c. to 1.95c., and warehouse prices on billet steel concrete bars range from 2.25c. to 2.75c.

Hot Rolled Strip.—Shipments of this commodity are at mill capacity, and prices are fairly well established. An automobile manufacturer near Chicago is operating at a 30 per cent higher rate than in February.

Coke.—This market is steady. Spot buying is dull, but specifications against first half contracts indicate that the local foundry melt is sustained.

Old Material.—A Chicago mill has bought about 8000 tons of No. 1 heavy melting steel at \$13.25 a gross ton, delivered. This price is 25c. below that recently paid by the same user. Dealers have dropped their trading prices to \$12.50 for the ordinary grade, but in some instances they must pay \$13 for heavy melting steel that will meet the rigid inspections made at some receiving points. A user has taken a round tonnage of hydraulic compressed sheets at \$11.60 a gross ton, delivered, but later in the week another user refused to consider that price. Malleable and cast grades are lower in price, and rerolling rails are off 50c. a gross ton. Buying of many specialties is moderately active, but in small lots and usually upon active solicitation by sellers. Although forged wheels and scrap plate have sold higher in the week, the general tendency of prices is to seek lower levels.

Prices delivered consumers' yards, Chicago:

| Per Gross Ton | |
|---|--------------------|
| Basic Open-Hearth Grades: | |
| Heavy melting steel..... | \$12.75 to \$13.25 |
| Shoveling steel..... | 12.75 to 13.25 |
| Frogs, switches and guards, cut apart, and miscellaneous rails..... | 13.50 to 14.00 |
| Hydraulic compressed sheets.... | 11.25 to 11.75 |
| Drop forge flashings..... | 9.75 to 10.25 |
| Forged, cast and rolled steel car-wheels..... | 15.50 to 16.00 |
| Railroad tires, charging box size..... | 16.25 to 16.75 |
| Railroad leaf springs, cut apart..... | 16.50 to 17.00 |
| Acid Open-Hearth Grades: | |
| Steel couplers and knuckles..... | 14.00 to 14.50 |
| Coil springs..... | 16.50 to 17.00 |
| Electric Furnace Grades: | |
| Axle turnings..... | 13.00 to 13.50 |
| Low phosphorus punchings..... | 14.25 to 14.75 |
| Low phosphorus plate, 12 in. and under..... | 14.00 to 14.50 |
| Blast Furnace Grades: | |
| Axle turnings..... | 10.75 to 11.25 |
| Cast iron borings..... | 9.50 to 10.00 |
| Short shoveling turnings..... | 9.50 to 10.00 |
| Machine shop turnings..... | 7.00 to 7.50 |
| Rolling Mill Grades: | |
| Iron rails..... | 13.50 to 14.00 |
| Rerolling rails..... | 14.50 to 15.00 |
| Cupola Grades: | |
| Steel rails less than 3 ft..... | 15.00 to 15.50 |
| Angle bars, steel..... | 14.00 to 14.50 |
| Cast iron carwheels..... | 14.00 to 14.50 |
| Malleable Grades: | |
| Railroad..... | 12.50 to 13.00 |
| Agricultural..... | 12.00 to 12.50 |
| Miscellaneous: | |
| *Relaying rails, 56 to 60 lb..... | 23.00 to 25.00 |
| *Relaying rails, 65 lb. and heavier..... | 26.00 to 31.00 |

Per Net Ton

| | |
|----------------------------------|----------------|
| Rolling Mill Grades: | |
| Iron angle and splice bars..... | 14.00 to 14.50 |
| Iron arch bars and transoms..... | 18.75 to 19.25 |
| Iron car axles..... | 21.50 to 22.00 |
| Steel car axles..... | 16.00 to 16.50 |
| No. 1 railroad wrought..... | 11.00 to 11.50 |
| No. 2 railroad wrought..... | 11.25 to 11.75 |
| No. 1 bushelling..... | 9.25 to 9.75 |
| No. 2 bushelling..... | 4.25 to 4.75 |
| Locomotive tires, smooth..... | 12.50 to 13.00 |
| Pipes and flues..... | 8.00 to 8.50 |
| Cupola Grades: | |
| No. 1 machinery cast..... | 14.50 to 15.00 |
| No. 1 railroad cast..... | 12.50 to 13.00 |
| No. 1 agricultural cast..... | 12.50 to 13.00 |
| Stove plate..... | 11.25 to 11.75 |
| Grate bars..... | 11.50 to 12.00 |
| Brake shoes..... | 11.50 to 12.00 |

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

Warehouse Prices, f.o.b. Chicago

| | Base per Lb. |
|---|------------------|
| Plates and structural shapes..... | 3.10c. |
| Soft steel bars..... | 3.00c. |
| Reinforcing bars, billet steel..... | 2.25c. to 2.75c. |
| Cold-finished steel bars and shafting— | |
| Rounds and hexagons..... | 3.60c. |
| Flats and squares..... | 4.10c. |
| Bands..... | 3.65c. |
| Hoops..... | 4.15c. |
| Black sheets (No. 24)..... | 3.95c. |
| Galvanized sheets (No. 24)..... | 4.80c. |
| Blue annealed sheets (No. 10)..... | 3.50c. |
| Spikes, standard railroad..... | 3.55c. |
| Track bolts..... | 4.55c. |
| Rivets, structural..... | 3.60c. |
| Rivets, boiler..... | 3.60c. |
| Per Cent Off List | |
| Machine bolts..... | 60 |
| Carriage bolts..... | 60 |
| Coach or lag screws..... | 60 |
| Hot-pressed nuts, squares, tapped or blank.. | 60 |
| Hot-pressed nuts, hexagons, tapped or blank.. | 60 |
| No. 8 black annealed wire, per 100 lb..... | \$3.20 |
| Common wire nails, base per keg..... | 3.00 |
| Cement coated nails, base per keg..... | 2.90 |

The Rust Engineering Co., Pittsburgh, has received a contract from the American Mond Nickel Co. for the construction of a batch type in and out billet reheating furnace to be built at its Hyde, Pa., plant. The furnace will be used to reheat nickel billets 4 in. by 4 in. by 5 ft. for rolling down into rods and shapes.

Philadelphia

Pig Iron Price Menaced by Buffalo Offers—Steel Is Quiet

PHILADELPHIA, March 13.—Specifications against first quarter contracts on plates, shapes and bars are lagging, but most mills are able to maintain a good rate of operation. The intention seems to be to establish the current quotation of 1.90c. per lb., Pittsburgh, on bars, 2.05c., Bethlehem, on shapes and 2.05c., Coatesville, on plates for second quarter contracts not made by the end of this month. Black and galvanized sheet prices continue to show more firmness and mills are making a decided effort to establish the second quarter contract price at 2.90c., Pittsburgh, on black and 3.75c., Pittsburgh, on galvanized. Consumers, however, are receiving deliveries on current contracts at lower prices and are hesitant in placing second quarter contracts at current quotations.

Eastern Pennsylvania furnaces are maintaining \$20 per ton, furnace, on foundry iron, but continued reports of low barge rates from Buffalo and some actual sales for second quarter have caused concern as to the future course of the market.

Pig Iron.—Some small tonnages for second quarter are being negotiated. Evidently \$20 is being maintained as the contract price for the next quarter, despite competition offered by Buffalo furnaces quoting on water and rail and all water delivery. A Lancaster, Pa., company reports the purchase of 600 to 700 tons of foundry grade from a Buffalo producer at about \$1 per ton under the lowest eastern Pennsylvania offer. Another eastern Pennsylvania consumer is reported to have bought a small tonnage for third quarter delivery from Buffalo at considerably less than the lowest eastern Pennsylvania quotation, which was based on \$20, furnace. The Delaware, Lackawanna & Western is asking for 50 tons of foundry iron for Scranton. Foreign iron has appeared in sizable quantities, but the recent arrival of a cargo of foundry grade from the United Kingdom is understood to be one of four cargoes going to a Delaware River cast iron pipe producer. Indian foundry pig iron is obtainable at about \$20.25, duty paid, Philadelphia. No sales of domestic low phosphorus are reported and the basic market is quiet.

Prices per gross ton at Philadelphia:

| | |
|---|------------------|
| East. Pa. No. 2 plain, 1.75 to 2.25 sil. | \$20.76 |
| East. Pa. No. 2X, 2.25 to 2.75 sil. | 21.26 |
| East. Pa. No. 1X..... | 21.76 |
| Basic (delivered eastern Pa.).... | \$19.50 to 20.00 |
| Gray forge | 19.75 to 20.25 |
| Malleable | 21.00 to 21.50 |
| Standard low phos. (f.o.b. New York State furnace)..... | 23.00 to 24.00 |
| Copper bearing low phos. (f.o.b. furnace) | 23.50 to 24.00 |
| Virginia No. 2 plain, 1.75 to 2.25 sil. | 24.54 to 25.04 |
| Virginia No. 2X, 2.25 to 2.75 sil.. | 25.04 to 25.54 |

Prices, except as specified otherwise, are delivered Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

Warehouse Prices, f.o.b. Philadelphia

| | Base per Lb. |
|---|------------------|
| Plates, 1/4-in. and heavier..... | 2.50c. to 2.60c. |
| Plates, 5/16-in. | 2.80c. to 3.00c. |
| Structural shapes | 2.40c. to 2.60c. |
| Soft steel bars, small shapes and iron bars (except bands)..... | 2.50c. |
| Round-edge iron | 3.50c. |
| Round-edge steel, iron finished 1 1/2 x 1 1/2 in. | 3.50c. |
| Round-edge steel, planished.... | 4.30c. |
| Reinforcing steel bars, square, twisted and deformed..... | 2.50c. to 3.00c. |
| Cold-finished steel, rounds and hexagons | 3.35c. |
| Cold-finished steel, squares and flats | 3.85c. |
| Steel hoops | 3.60c. |
| Steel bands, No. 12 gage to 5/8-in., inclusive | 3.35c. |
| Spring steel | 5.00c. |
| Black sheets (No. 24)..... | 4.25c. |
| Galvanized sheets (No. 24)..... | 5.10c. |
| Blue annealed sheets (No. 10)... | 3.15c. |
| Diamond pattern floor plates—1/4-in. | 5.30c. |
| 5/16-in. | 5.50c. |
| Rails | 3.20c. |
| Swedish iron bars..... | 6.60c. |

Ferromanganese.—Requisitions against contracts are coming in more freely and there are occasional carload purchases in the open market. Prices continue firm at \$100 per ton, seaboard.

Billets.—Some small inquiry for second quarter delivery has begun to develop and there is still the usual small-lot purchasing for prompt shipment. Producers believe that prices of semi-finished material should be advanced about \$1 per ton in view of the higher finished material market, but \$33, Pittsburgh, is still being quoted on rerolling billets with forging quality at \$38, Pittsburgh.

Plates.—The market is quite firm at 2c., Coatesville, on contracts for the next quarter and 2.05c., Coatesville, is quoted for current delivery. Shipments on contracts are good, but new business is light.

Shapes.—Many consumers are delaying specifications against contracts, so it appears that there will be some shipments carried over into second quarter, unless mills cancel contracts not fully specified by the end of this month. Quotations continue at 2c., Bethlehem, or 2.13c., delivered Philadelphia, on contracts and 2.12c. to 2.18c., delivered Philadelphia, on current purchases. Bridge construction projects promise some desirable tonnage for the spring.

Bars.—There is a moderate volume of shipment on contracts, as a result of continued pressure by the mills for specifications. On contracts for the next quarter 1.85c., Pittsburgh, is quoted, or 2.17c., Philadelphia, while the current delivered price is 2.22c., Philadelphia.

Sheets.—Black and galvanized sheet prices continue to exhibit a tendency to greater strength and mills are quoting 2.90c., Pittsburgh, on black and 3.75c., Pittsburgh, on galvanized as the schedule for second quarter contracts. Consumers, however, are receiving deliveries on lower-priced purchases and manifest little interest in contracting at these prices. Blue annealed and strip sheets seem to be firm on the basis of 2.10c., Pittsburgh.

Warehouse Business.—There is a good volume of purchasing, but tonnages involved are small. Prices are being better maintained than in several months. The quantity differentials on bars and small shapes are being adhered to and jobbers are beginning to consider extension of these differentials to hoops, bands and other products.

Imports.—In the week ended March 10, a total of 250 tons of Spanish iron ore and three tons of British steel bars arrived at this port.

Old Material.—A continued tendency toward weakness in prices is noted. The market on all grades is quiet. Forge fire has been purchased at \$11 per ton, Coatesville, and \$11.50 per ton, Reading, Pa. Machine shop turnings are quoted at \$11 per ton on the basis of current contracts, but consumers are offering to buy at lower prices. There was about 3500 tons of heavy melting steel on the Pennsylvania Railroad list this month. The only items sold in eastern Pennsylvania were a small tonnage of grate bars at about \$12.65 per ton, delivered Harrisburg, and a tonnage of breakable cast at \$15.40, Harrisburg, and turnings at \$11.35, Pencoyd.

Prices per gross ton delivered consumers' yards, Philadelphia district:

| | |
|--|--------------------|
| No. 1 heavy melting steel..... | \$13.50 to \$14.00 |
| Scrap T rails..... | 13.00 to 13.50 |
| No. 2 heavy melting steel..... | 11.00 to 11.50 |
| No. 1 railroad wrought..... | 14.50 to 15.00 |
| Bundled sheets (for steel works) | 10.50 to 11.00 |
| Machine shop turnings (for steel works) | 11.00 |
| Heavy axle turnings (or equivalent) | 12.00 to 12.50 |
| Cast borings (for steel works and rolling mill)..... | 11.00 |
| Heavy breakable cast (for steel works) | 15.50 to 16.00 |
| Railroad grate bars..... | 12.50 |
| Stove plate (for steel works).... | 12.50 |
| No. 1 low phos., heavy, 0.04 per cent and under..... | 17.50 to 18.00 |
| Couplers and knuckles..... | 16.00 to 16.50 |
| Rolled steel wheels..... | 15.50 to 16.00 |
| No. 1 blast furnace scrap..... | 10.50 to 11.00 |
| Machine shop turnings (for rolling mill) | 11.00 |
| Wrought iron and soft steel pipes and tubes (new specifications) | 12.50 |
| Shafting | 17.50 to 18.00 |
| Steel axles | 19.00 to 20.00 |
| No. 1 forge fire..... | 10.00 to 11.50 |
| Steel rails for rolling..... | 15.00 to 15.50 |
| Cast iron carwheels..... | 15.50 to 16.00 |
| No. 1 cast..... | 16.00 to 16.50 |
| Cast borings (for chemical plant) | 14.50 to 15.00 |

New York

Pig Iron Sales About 8500 Tons— New Steel Buying Light

NEW YORK, March 13.—Sales of pig iron by local brokers during the week totaled about 8500 tons. The larger consumers seem to have covered their second quarter requirements, and only a small total of inquiries is pending. There is in evidence a tendency on the part of consumers to compare their inventories and order books and return to hand-to-mouth buying. Buffalo furnaces are maintaining \$16.50 per ton, base, and consumers at water delivery points are showing increasing interest in barge shipments. About 2000 tons of foundry iron for a Port Chester, N. Y., consumer is still under negotiation, owing to difficulty in arranging for barge delivery at the buyer's dock. Competition for freight among companies operating barge service from Buffalo to New York has been so keen recently that less than \$2 per ton is said to have been quoted if tonnage was available before the wheat movement from Buffalo. As a result, barge operators and shippers met yesterday to confer on the situation. Foreign pig iron has begun to appear, following a long period of high prices and small arrivals. A cargo of British foundry iron has arrived at Philadelphia, and several more are scheduled, also a cargo of low phosphorus. A small lot of German iron is reported to have been sold in eastern Pennsylvania, and Indian pig iron is slightly more competitive with the domestic product.

Prices per gross ton, delivered New York district:

| | |
|--|--------------------|
| Buffalo No. 2 fdy., sil. 1.75 to 2.25 | \$21.41 to \$21.91 |
| East. Pa. No. 2 fdy., sil. 1.75 to 2.25 | 20.39 to 22.52 |
| East. Pa. No. 2X fdy., sil. 2.25 to 2.75 | 20.89 to 23.02 |
| East. Pa. No. 1X fdy., sil. 2.75 to 3.25 | 21.39 to 23.52 |

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.

Ferroalloys.—New business in both ferromanganese and spiegeleisen is confined to carloads and small lots. Specifications on contract for both alloys are reported as exceedingly heavy. There is also a good specification demand for ferrosilicon and ferrochromium.

Reinforcing Bars.—The Truscon Steel Co. will furnish approximately 1500 tons of bars for the Eleto warehouse in New York. Other business taken during the week has been in small tonnages, although fair in point of total volume. Effective March 15, distributors will advance the mill price \$1 a ton to 2c., Pittsburgh. No immediate change in warehouse prices is contemplated.

Finished Steel.—Conditions in this market have been quiet during the past week. Consumers and mill representatives seem hesitant about testing the advanced prices recently announced on a number of products. Although some scattered orders have been taken at the new prices, a real test is yet to be made. This condition applies mostly to bars, shapes and plates, on which 1.90c., Pittsburgh, and 2.05c., Eastern mills, were recently announced. While a considerable tonnage was placed on order for second quarter delivery at the old prices, \$1 a ton less than the new, many consumers are not yet covered. In sheets and strip, specifications are coming in freely, but new business is not so satisfactory. Structural awards in the metropolitan territory, exclusive of bridges, subways, etc., as reported to the Structural Steel Board of Trade, fell off in February, amounting only to 24,000 tons. This compares with 30,000 tons in January and with 58,000 tons in February, 1927. Prospects for new business, however, are encouraging.

Cast Iron Pipe.—An effort is being made by Birmingham producers of cast iron bell and spigot pipe to establish \$31 per ton, base, for lots of 200 tons or less and \$29 or more for purchases in excess of 200 tons. A producer in the North which recently booked some business at less than the scheduled market is quoting on a higher basis. There is a moderate volume of

private purchasing of pipe, but New England municipalities have not yet appeared with their usual pipe requirements for spring delivery. The Department of Purchase, New York, opens bids March 14 on 3280 tons of 8-in., 1830 tons of 12-in. and 245 tons of 6-in. pipe, a total of 5355 tons. Montclair, N. J., has placed 245 tons of 6, 8 and 12-in. water pipe with the National Cast Iron Pipe Co.

Prices per net ton, delivered New York: Water pipe 6-in. and larger, \$37.25 to \$38.25; 4-in. and 5-in., \$42.25 to \$43.25; 3-in., \$52.25 to \$53.25; Class A and gas pipe, \$4 to \$5 extra.

Warehouse Business.—The usual spring demand for structural material has increased the tonnage of purchases from stock. Steel bars are in fair demand. Jobbers in this district are showing interest in the possibility of adopting quantity differentials on steel bars

Warehouse Prices, f.o.b. New York

| | Base per Lb. |
|---|-------------------|
| Plates and structural shapes | 3.34c. |
| Soft steel bars and small shapes | 3.24c. |
| Iron bars | 3.24c. |
| Iron bars, Swedish charcoal | 7.00c. to 7.25c. |
| Cold-finished shafting and screw stock— | |
| Rounds and hexagons | 3.40c. |
| Flats and squares | 3.90c. |
| Cold-rolled strip, soft and quarter hard | 5.15c. to 5.40c. |
| Hoops | 4.49c. |
| Bands | 3.99c. |
| Blue annealed sheets (No. 10 gage) | 3.84c. to 3.89c. |
| Long terme sheets (No. 24) | 5.80c. |
| Standard tool steel | 12.00c. |
| Wire, black annealed | 4.50c. |
| Wire, galvanized annealed | 5.15c. |
| Tire steel, 1½ x ½ in. and larger | 3.30c. |
| Smooth finish, 1 to 2½ x ¼ in. and larger | 3.65c. |
| Open-hearth spring steel, bases | 4.50c. to 7.00c. |
| Machine bolts, cut thread | Per Cent Off List |
| ¾ x 6 in. and smaller | .55 to 60 |
| 1 x 30 in. and smaller | .50 to 50 and 10 |
| Carriage bolts, cut thread | |
| ½ x 6 in. and smaller | .55 to 60 |
| ¾ x 20 in. and smaller | .50 to 50 and 10 |
| Coach screws | |
| ½ x 6 in. and smaller | .55 to 60 |
| 1 x 16 in. and smaller | .50 to 50 and 10 |
| Boiler Tubes— | Per 100 Ft. |
| Lap welded steel, 2-in. | \$17.33 |
| Seamless steel, 2-in. | 20.24 |
| Charcoal iron, 2-in. | 25.00 |
| Charcoal iron, 4-in. | 67.00 |

Discounts on Welded Pipe

| Standard Steel— | Black | Galv. |
|--------------------|-------|-------|
| ½-in. butt. | 46 | 29 |
| ¾-in. butt. | 51 | 37 |
| 1-3-in. butt. | 53 | 39 |
| 2½-6-in. lap. | 48 | 35 |
| 7 and 8-in. lap. | 44 | 17 |
| 11 and 12-in. lap. | 37 | 12 |
| Wrought Iron— | | |
| ½-in. butt. | 5 | +19 |
| ¾-in. butt. | 11 | + 9 |
| 1-1½-in. butt. | 14 | + 6 |
| 2-in. lap. | 5 | +14 |
| 3-6-in. lap. | 11 | + 6 |
| 7-12-in. lap. | 3 | +16 |

Tin Plate (14 x 20 in.)

| | Prime | Seconds |
|------------------------|--------|---------|
| Coke, 100 lb. base box | \$6.45 | \$6.20 |
| Charcoal, per box— | A | AAA |
| IC | \$9.70 | \$12.10 |
| IX | 12.00 | 14.25 |
| IXX | 13.90 | 16.00 |

Terne Plate (14 x 20 in.)

| | |
|---|--------------------|
| IC—20-lb. coating | \$10.00 to \$11.00 |
| IC—30-lb. coating | 12.00 to 13.00 |
| IC—40-lb. coating | 13.75 to 14.25 |
| Sheets Box Annealed—Black, C. R. One Pass | |
| Per Lb. | |
| Nos. 18 to 20 | 3.80c. to 4.00c. |
| No. 22 | 3.95c. to 4.15c. |
| No. 24 | 4.00c. to 4.20c. |
| No. 26 | 4.10c. to 4.30c. |
| No. 28* | 4.25c. to 4.45c. |
| No. 30 | 4.50c. to 4.70c. |

Sheets, Galvanized

| | Per Lb. |
|---------|------------------|
| No. 14 | 4.35c. |
| No. 16 | 4.45c. |
| No. 18 | 4.35c. to 4.60c. |
| No. 20 | 4.50c. to 4.75c. |
| No. 22 | 4.55c. to 4.80c. |
| No. 24 | 4.70c. to 4.95c. |
| No. 26 | 4.95c. to 5.20c. |
| No. 28* | 5.20c. to 5.45c. |
| No. 30 | 5.60c. to 5.85c. |

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

and small shapes. Black and galvanized sheets are quiet, with purchases confined to small lots. Prices are generally firm.

Mill prices per lb., delivered New York: Soft steel bars, 2.19c. to 2.24c.; plates, 2.17½c. to 2.22½c.; structural shapes, 2.14½c. to 2.19½c.; bar iron, 2.14c.

Coke.—Standard foundry grade is offered for prompt shipment at \$4 per ton, Connellsville, and sometimes for less. Standard furnace coke is obtainable at \$2.75 per ton, Connellsville. Current purchasing is in most cases limited to carload lots. Delivered prices of Connellsville foundry coke are: To northern New Jersey, \$8.03; to New York or Brooklyn, \$8.79; to Newark or Jersey City, \$7.91. By-product coke is unchanged at \$9 to \$9.40 per net ton, delivered Newark or Jersey City.

Old Material.—Shipments of No. 1 heavy melting steel are going to Bethlehem, Steelton, Coatesville, Pa., and Claymont, Del. On recent contracts for steel mill stove plate, brokers are paying \$12 per ton, delivered. Forge fire is being purchased at \$10.50 per ton, delivered Coatesville, and \$11 per ton, Reading. Machine shop turnings are still quoted by dealers at \$10.50 per ton, delivered eastern Pennsylvania, and no sale at \$10.50 per ton, the offering price of consumers, has been reported. Railroad grate bars on the Pennsylvania Railroad list brought \$12.65 per ton, Harrisburg; heavy breakable cast, \$15.40, Harrisburg; steel axles, \$20.75 per ton, Columbia, Pa., and machine shop turnings, \$11.35, Pencoed, Pa.

Dealers' buying prices per gross ton f.o.b. New York:

| | |
|---|--------------------|
| No. 1 heavy melting steel..... | \$10.00 to \$10.85 |
| Heavy melting steel (yard)..... | 7.00 to 7.25 |
| No. 1 heavy breakable cast..... | 11.25 to 12.00 |
| Stove plate (steel works)..... | 8.50 to 9.00 |
| Locomotive grate bars..... | 8.75 to 9.00 |
| Machine shop turnings..... | 6.75 to 7.50 |
| Short shoveling turnings..... | 7.00 to 7.50 |
| Cast borings (blast furnace or steel works)..... | 6.75 to 7.50 |
| Mixed borings and turnings..... | 7.00 to 7.50 |
| Steel car axles..... | 16.00 to 16.50 |
| Iron car axles..... | 23.75 to 24.75 |
| Iron and steel pipe (1 in. dia., not under 2 ft. long)..... | 8.75 |
| Forge fire..... | 6.75 to 7.00 |
| No. 1 railroad wrought..... | 10.50 to 11.00 |
| No. 1 yard wrought, long..... | 9.00 to 9.50 |
| Rails for rolling..... | 10.50 to 11.00 |
| Cast iron carwheels..... | 11.25 to 11.75 |
| Stove plate (foundry)..... | 8.50 to 9.00 |
| Malleable cast (railroad)..... | 10.00 to 10.50 |
| Cast borings (chemical)..... | 11.00 to 11.50 |

Prices per gross ton, delivered local foundries:

| | |
|---|--------------------|
| No. 1 machinery cast..... | \$13.75 to \$14.25 |
| No. 1 heavy cast (columns, building materials, etc.), cupola size | 11.75 to 12.25 |
| No. 2 cast (radiators, cast boilers, etc.)..... | 11.25 to 11.75 |

Cleveland

Heaviest Demands Still from Automotive Industry—Alloy Bars Higher

CLEVELAND, March 13.—The demand for steel in specifications against contracts continues heavy from the automotive industry and good from other consuming industries. Orders booked so far this month by leading producers show quite a gain over the corresponding period in February. As considerable tonnage in steel bars, plates and structural material against first quarter 1.80c. contracts is still unspecified, a good

volume of orders against these contracts is expected during the latter half of the month. Most contract buyers have placed second quarter contracts for steel bars, plates and shapes at 1.85c. and some contracts that had been taken at 1.90c. have been revised to the lower figure. Mills are now asking 1.90c., but this will apply to small consumers who do not place contracts. However, one Ohio plate mill is still quoting plates at 1.85c. The local mill price on steel bars is 1.90c., Cleveland.

Buyers of sheets and strip steel, including the large consumers in the automotive industry, are showing little interest in second quarter contracts. In the case of sheets, particularly, there is a hesitancy about buying, as many consumers seem to be doubtful whether present prices will hold. The automotive industry is covered by low-priced sheet and strip first quarter contracts and is devoting its attention to getting in specifications against these contracts, and these shipments will about cover its April requirements.

Inquiry in the structural field is light. Keen competition still prevails. On one job, for which bids were taken during the week, a price of \$60 a ton fabricated and delivered is reported. The smaller local fabricating shops have little work. No Lake shipbuilding work is in prospect. The Akron, Cleveland & Youngstown Railroad is expected to be in the market shortly for 4000 to 5000 tons of rails.

The only important price announcements during the week were the establishment of new prices on alloy steel, including the adoption of a base price and the reestablishment of the first quarter price on cold-finished steel bars.

Pig Iron.—Sales for the second quarter, while not as large as during some of the previous weeks, are holding up well. Cleveland interests during the week sold 31,000 tons in foundry and malleable grades. While inquiry is light, producers believe there is considerable business yet to be placed for the second quarter. The market has a firm tone and Cleveland furnaces are holding closely to \$17 for foundry and malleable iron for outside shipment and to \$18, furnace, for local delivery. However, the lower price might still be shaded 25c. a ton for shipment to points where local furnaces have a freight disadvantage. One Lake furnace interest is holding to \$17.50, and in Michigan the market is firm at \$18. Shipments show some gain over last month. Several of the foundries in the automotive industry which took heavy shipments last month are taking the same volume of iron this month and one or two are taking larger quantities. Outside of the automotive industry, shipments show quite a little gain over February.

Prices per gross ton at Cleveland:

| | |
|---|------------------|
| N'th'n No. 2 fdy., sil. 1.75 to 2.25..... | \$18.50 |
| Southern fdy., sil. 1.75 to 2.25..... | 22.00 |
| Malleable..... | 18.50 |
| Ohio silvery, 8 per cent..... | 28.00 |
| Basic, Valley furnace..... | 17.00 |
| Standard low phos., Valley furnace..... | \$26.50 to 27.00 |

Prices, except on basic and low phosphorus, are delivered Cleveland. Freight rates: 50c. from local furnaces; \$3 from Jackson, Ohio; \$6 from Birmingham.

Iron Ore.—All rail shipments of Lake Superior ore during 1927 amounted to 1,238,845 gross tons and the total movement both all rail and water for the season was 52,344,099 tons, according to figures just tabulated by the Lake Superior Iron Ore Association. Total shipments by ranges were: Mesabi, 32,975,506; Gogebic, 6,385,558; Menominee, 5,213,256; Marquette, 4,147,777; Cuyuna, 1,981,501; Vermilion, 1,547,847; Mayville-Baraboo, 92,654. Ore shipments from Lake Erie ports during February were 303,114 tons. The dock balance March 1 was 5,987,408 tons, compared with 6,062,608 tons on the same date a year ago.

Alloy Steel.—New net prices on alloy steel have been announced by leading manufacturers. The method of quoting prices for each grade heretofore followed has been abandoned and in its place one base price figured on alloy bars has been adopted and the price of each grade is determined by an alloy differential that is added to the base. The base adopted is 2.65c. per lb. Hereafter when market conditions warrant a change this will be made in the base, not disturbing the dif-

Warehouse Prices, f.o.b. Cleveland

| | Base per lb. |
|--|------------------|
| Plates and structural shapes..... | 3.00c. |
| Soft steel bars..... | 3.00c. |
| Reinforcing steel bars..... | 2.25c. to 2.75c. |
| Cold-finished rounds and hexagons..... | 3.65c. |
| Cold-finished flats and squares..... | 4.15c. |
| Hoops and bands..... | 3.65c. |
| Cold-finished strip..... | *5.95c. |
| Black sheets (No. 24)..... | 3.75c. |
| Galvanized sheets (No. 24)..... | 4.40c. to 4.60c. |
| Blue annealed sheets (No. 10)..... | 3.25c. |
| No. 9 annealed wire, per 100 lb..... | \$2.90 |
| No. 9 galvanized wire, per 100 lb..... | 3.35 |
| Common wire nails, base per keg..... | 2.90 |

*Net base, including boxing and cutting to length.

ferential and preserving the price relationship between the grades. However, should changes in prices of any alloy user warrant a change on a certain grade irrespective of other grades, the differential on that grade will be changed. Widely varying changes are shown in the new prices. Two largely used grades, series 2300, 3½ per cent nickel, and 3100 nickel chromium are advanced \$3 and \$4 a ton respectively over the recently ruling minimum prices. Sharp declines have been made on some of the other nickel chromium series, being as much as \$12 a ton on series 3200. Other grades show both declines and advances. The new prices became effective March 7 on current orders, but will not apply to contract customers until March 16. This will give these customers an opportunity to specify steel to be shipped during the remainder of March at the old prices. The leading Ohio producer who has been holding largely to a Pittsburgh base has abandoned the Pittsburgh base entirely, now quoting only a mill base.

Coke.—Foundry coke shipments are fair but the new demand is light. Connellsville foundry coke is steady at \$3.75 to \$5.10. Connellsville heating coke ranges from \$2.65 to \$3. Ohio by-product foundry coke is quoted at \$8, Painesville, for March shipment.

Bolts, Nuts and Rivets.—Bolt and nut manufacturers have started to take contracts for the second quarter at the prices that prevailed this quarter, except on stove bolts, which were advanced 10 per cent, as announced last week. While specifications are fair, they do not show an increase over the previous few weeks. The industry is now operating at close to 70 per cent of capacity. Rivet makers have taken second quarter contracts from some of the large consumers at the \$3 per ton price advance and do not expect to meet serious objection to the higher price.

Sheets.—The automotive industry continues to take heavy tonnages against contracts, but the demand from other sources is moderate, and there is not much activity either in current orders or in second quarter contracts. Mills are getting a good volume of orders for auto body sheets at the present 4.15c. price, but orders for other grades are largely against lower-priced contracts. Galvanized sheets are irregular, with concessions of \$2 a ton from the regular 3.75c. Pittsburgh price, but other grades appear firm.

Cold-Finished Steel Bars.—One of the smaller producers took second quarter contracts in Detroit at 2.20c., Pittsburgh, during the week, and other manufacturers, who had expected to cover their trade at \$2 a ton higher and to make another advance to 2.40c. for current orders, fell in line so that 2.20c., Pittsburgh, and 2.25c., Cleveland, are the established prices for the second quarter. These are the prices that prevailed on contracts during the present quarter.

Strip Steel.—Specifications are fairly heavy against first quarter contracts and shipments against these contracts will carry many consumers through April. Some of the smaller consumers, but not many of the large buyers, have placed second quarter contracts. Current orders are not numerous. Regular prices are being maintained.

Reinforcing Bars.—A local inquiry for 1000 tons for store and warehouse buildings has been issued, and small lots are in better demand. Billet steel reinforcing bars are still quoted at 1.85c., Cleveland, and rail steel bars are unchanged at 1.75c., mill.

Warehouse Business.—While sales are fair, the volume shows a slight falling off. There is not much demand from the building field. Reinforcing bars out of stock, which are affected by mill competition, are going as low as 2.25c. Other prices are firm.

Old Material.—The supply of scrap continues in excess of the demand and the market is inactive and has a weak tone, although prices are unchanged. Mills are still restricting shipments and local dealers are well covered against outstanding orders. Detroit dealers are reported to have sold considerable tonnage of compressed sheet scrap during the week for shipment to the Pittsburgh district at \$14.50. A Buffalo consumer has purchased 20,000 tons of scrap in Detroit, mostly compressed sheets, for delivery when naviga-

tion opens. Two cargoes have been loaded and will probably be shipped late in the month. With turnings down to \$7 in Detroit, the price is proving attractive to Canadian steel makers and a considerable tonnage has been sold for shipment from Detroit to Canada. Most of this will go to Hamilton.

Prices per gross ton, delivered consumers' yards:

| Basic Open-Hearth Grades | |
|---|--------------------|
| No. 1 heavy melting steel..... | \$13.75 to \$14.00 |
| No. 2 heavy melting steel..... | 13.25 to 13.50 |
| Compressed sheet steel..... | 12.75 to 13.00 |
| Light bundled sheet stampings... | 11.50 to 11.75 |
| Drop forge flashings..... | 12.50 to 13.00 |
| Machine shop turnings..... | 9.00 to 9.25 |
| No. 1 railroad wrought..... | 11.50 to 12.00 |
| No. 2 railroad wrought..... | 13.50 to 14.00 |
| No. 1 busheling..... | 11.00 to 11.25 |
| Pipes and flues..... | 9.00 to 9.50 |
| Steel axle turnings..... | 12.50 to 13.00 |
| Acid Open-Hearth Grades | |
| Low phosphorus forging crops... | 16.50 to 17.00 |
| Low phosphorus, billet, bloom and slab crops..... | 17.00 to 17.50 |
| Low phosphorus sheet bar crops..... | 16.50 to 17.00 |
| Low phosphorus plate scrap..... | 16.00 to 16.50 |
| Blast Furnace Grades | |
| Cast iron borings..... | 10.00 to 10.25 |
| Mixed borings and short turnings | 10.00 to 10.25 |
| No. 2 busheling..... | 10.00 to 10.25 |
| Cupola Grades | |
| No. 1 cast..... | 16.50 to 17.00 |
| Railroad grate bars..... | 11.00 to 12.00 |
| Stove plate..... | 12.00 to 12.50 |
| Rails under 3 ft..... | 18.00 to 18.50 |
| Miscellaneous | |
| Railroad malleable..... | 15.00 to 15.50 |
| Rails for rolling..... | 16.25 to 16.50 |

Largest February Output of Cement

Portland cement production in February is reported by the United States Bureau of Mines at 8,785,000 bbl., a decline of 10 per cent from the January output of 9,766,000 bbl., but the largest February volume ever reached. Shipments were 6,559,000 bbl., about the same as in January, but 2½ per cent below February, 1927. Stocks at the end of the month were 27,339,000 bbl., a gain of 9 per cent on January and the largest total ever recorded.

Bibliography on Mechanical Springs

A notable contribution has been made by the special research committee on mechanical springs of the American Society of Mechanical Engineers in the compilation of a bibliography on mechanical springs, which has been published recently by the A. S. M. E.

More than 600 references to the design, materials, manufacture, testing, use, etc., of flat, helical, spiral and other types of springs are briefly abstracted. The publication, made up of 71 pages, is divided into three sections, in the first of which the material is arranged by authors. There is also a chronological index, beginning with the year 1678, and a subject index. References to articles published in 1927 are not included, and blank pages have been added to permit notation of 1927 and current references. Copies of the bibliography may be obtained from the A. S. M. E., 29 West Thirty-ninth Street, New York. The price per copy is \$1.25.

Business Data in Tabular Form

In a "Record Book of Business Statistics," the Department of Commerce has issued a pamphlet of 60 pages, mostly tabular, giving pertinent facts regarding metals and machinery, in the shape of shipments, orders, production, prices, imports and exports, unfilled orders and other particulars. The materials covered include ores, pig iron, ingots, sheets, castings, fabricated material of various types, machine tools, stokers, pumps, farm implements, non-ferrous metals, plumbing fixtures and a number of other items. Some of the series of tables run back to 1910 and most of them are carried through to the end of 1926. As a pamphlet of reference, this record book is of great value. Copies may be obtained at 10c. each from the superintendent of documents, Government Printing Office, Washington.

Birmingham

Steel Demand Well Maintained—Pig Iron Buying for Spot Shipment Only

BIRMINGHAM, March 13.—Sales of pig iron during the past week were practically all for spot delivery. Very little second quarter tonnage has been placed. Shipments continue on about the same level as for the past few weeks. One company is slightly ahead of production. Ruling prices remain at \$16, base furnace. The Tennessee Coal, Iron & Railroad Co., on March 6, blew in its No. 1 furnace at Bessemer, Ala., on foundry iron. There were no other changes. Eighteen furnaces are now in blast, 10 being on foundry, seven on basic and one on recarburizing iron.

Prices per gross ton, f.o.b. Birmingham district furnaces:

| | |
|--------------------------------------|---------|
| No. 2 foundry, 1.75 to 2.25 sil..... | \$16.00 |
| No. 1 foundry, 2.25 to 2.75 sil..... | 16.50 |
| Basic | 15.00 |

Finished Steel.—New business is developing at an even rate, and prices are unchanged but firm. Reinforcing bar manufacturers have taken a fair number of small orders, ranging from 50 to 75 tons each. Only a nominal amount of business has been booked by structural steel fabricators. Open-hearth operations are unchanged, the Tennessee company having 13 to 14 furnaces active and the Gulf States Steel Co. four.

Cast Iron Pipe.—A fair amount of new business is being received, consisting chiefly of small orders. Inquiries are more numerous, and the market appears stronger than last week. Tuscaloosa, Ala., is expected to place some tonnage within two or three weeks. The McWane Cast Iron Pipe Co. will ship 500 tons of 6 and 8-in. pipe to Syracuse, N. Y. The new mechanical unit of this company, placed in operation in January, is now on double shift. The ruling base quotation on pressure pipe remains at \$29 to \$30, Birmingham. Plant operations and shipments continue at about the same level as for the past several weeks.

Coke.—More interest is being shown in second quarter buying, and a fair amount of tonnage is being booked. No improvement is shown in spot buying of foundry coke. Both spot and contract quotations remain at \$5, ovens. Shipments continue at a regular rate.

Old Material.—A slight increase in demand is evident, and more inquiries are being received. Prices are unchanged.

Prices per gross ton, delivered Birmingham district consumers' yards:

| | |
|----------------------------------|-------------------|
| Heavy melting steel..... | \$9.50 to \$10.00 |
| Scrap steel rails..... | 11.00 to 11.50 |
| Short shoveling turnings..... | 8.00 to 8.50 |
| Cast iron borings..... | 8.00 to 8.50 |
| Stove plate | 13.00 to 14.00 |
| Steel axles | 19.00 to 20.00 |
| Iron axles | 20.00 to 21.00 |
| No. 1 railroad wrought..... | 10.00 to 10.50 |
| Rails for rolling..... | 13.00 |
| No. 1 cast..... | 15.00 |
| Tramcar wheels | 12.50 to 13.50 |
| Cast iron carwheels..... | 12.00 to 13.00 |
| Cast iron borings, chemical..... | 13.50 to 14.00 |

Warehouse Prices, f.o.b. St. Louis

| | Base per Lb. |
|--|-------------------|
| Plates and structural shapes..... | 3.25c. |
| Bars, soft steel or iron..... | 3.15c. |
| Cold-finished rounds, shafting and screw stock | 3.75c. |
| Black sheets (No. 24)..... | 4.45c. |
| Galvanized sheets (No. 24)..... | 5.25c. |
| Blue annealed sheets (No. 10)..... | 3.60c. |
| Black corrugated sheets (No. 24)..... | 4.50c. |
| Galvanized corrugated sheets..... | 5.30c. |
| Structural rivets | 3.75c. |
| Boiler rivets | 3.75c. |
| | Per Cent Off List |
| Tank rivets, $\frac{3}{8}$ -in. and smaller, 100 lb. or more | 70 |
| Less than 100 lb..... | 65 |
| Machine bolts | 60 |
| Carriage bolts | 60 |
| Lag screws | 60 |
| Hot-pressed nuts, square, blank or tapped, 200 lb. or more..... | 60 |
| Less than 200 lb..... | 50 |
| Hot-pressed nuts, hexagons, blank or tapped, 200 lb. or more..... | 60 |
| Less than 200 lb..... | 50 |

St. Louis

Further Declines in Scrap Prices—Fair Bookings in Plates, Shapes and Bars

ST. LOUIS, March 13.—Melters have sufficient pig iron in stock or on the way for their first quarter requirements, and buying for second quarter has been done sparingly. Shipments have been holding up well, and prices are firm. The melt in the district is reported to be increasing. The Granite City maker during the week sold 3100 tons, all of which was foundry iron except 300 tons of malleable. An Illinois equipment builder bought 1000 tons, and a local specialty maker placed 300 tons. A leading Southern furnace sold 400 tons, 300 tons for prompt shipment.

Prices per gross ton at St. Louis:

| | |
|--------------------------------------|--------------------|
| No. 2 fdy., sil. 1.75 to 2.25 f.o.b. | |
| Granite City, Ill. | \$19.50 to \$20.00 |
| Northern No. 2 fdy., delivered | |
| St. Louis | 20.66 |
| Southern No. 2 fdy., delivered... | 20.42 |
| Northern malleable, delivered.... | 20.66 |
| Northern basic, delivered..... | 20.66 |

Freight rates: 81c. from Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

Coke.—Warmer weather is causing a decline in the demand for domestic grades. The consumption of foundry grades is being well maintained, but buying continues largely on a hand-to-mouth basis. Prices are unchanged.

Finished Steel.—New business and specifications against contracts for plates, shapes and bars were received in fair volume during the week. A slight improvement is reported in the bookings of structural steel fabricators. Warehouse business continues only in fair volume.

Old Material.—Consumers of scrap in the St. Louis district still refuse to buy, pending a further reduction of their stocks. Dealers are hoping that the mills, which are all busy, will resume buying by April 1 at least. In the meantime, the market is weak, with half a dozen items 25c. to 50c. a ton lower than a week ago. Railroad lists include: Santa Fe, 5980 tons; Chesapeake & Ohio, 8949 tons; Southern Pacific, 2325 tons; Wabash, 1655 tons; Texas & Pacific, 870 tons; International-Great Northern, 400 tons (steel rails); Ann Arbor, 360 tons; Toledo & Western, 350 tons; Kansas City Southern, 290 tons; Great Northern, 120 carloads; Nickel Plate, 34 carloads.

Prices per gross ton, f.o.b. dealers' yards and delivered St. Louis district consumers' works:

| | |
|--|--------------------|
| Heavy melting steel..... | \$11.50 to \$12.00 |
| No. 1 locomotive tires..... | 12.75 to 13.25 |
| Heavy shoveling steel..... | 11.50 to 12.00 |
| Miscellaneous standard-section rails, including frogs, switches and guards, cut apart..... | 13.50 to 14.00 |
| Railroad springs | 14.25 to 14.75 |
| Bundled sheets | 8.75 to 9.25 |
| No. 2 railroad wrought..... | 11.50 to 12.00 |
| No. 1 busheling..... | 9.75 to 10.25 |
| Cast iron borings..... | 9.00 to 9.50 |
| Iron rails | 13.00 to 13.50 |
| Rails for rolling..... | 13.75 to 14.25 |
| Machine shop turnings..... | 7.50 to 8.00 |
| Steel car axles | 18.50 to 19.00 |
| Iron car axles | 23.50 to 24.00 |
| Wrought iron bars and transoms..... | 21.00 to 21.50 |
| No. 1 railroad wrought..... | 10.00 to 10.50 |
| Steel rails, less than 3 ft..... | 15.00 to 15.50 |
| Steel angle bars | 12.00 to 12.50 |
| Cast iron carwheels..... | 13.50 to 14.00 |
| No. 1 machinery cast..... | 14.00 to 14.50 |
| Railroad malleable | 11.00 to 11.50 |
| No. 1 railroad cast..... | 13.50 to 14.00 |
| Stove plate | 13.00 to 13.50 |
| Agricultural malleable | 12.00 to 12.50 |
| Relaying rails, 60 lb. and under... | 20.50 to 23.50 |
| Relaying rails, 70 lb. and over... | 26.50 to 29.00 |

Production of bituminous coal in the United States in the week ended March 3 is estimated by the Bureau of Mines at 10,044,000 net tons. This is 1 per cent under the preceding week and compares with 13,262,000 tons in the corresponding week of last year. Total coal raised in the coal year, to March 3, is given as 439,876,000 tons.

Canada

Steel Mills Operate at High Rate—Large Tonnage of Structural Work Pending

TORONTO, ONT., March 13.—With the opening of spring but a few days in the future, iron and steel interests of Canada are looking forward to improvement in many lines of industry. Business at the present time is good, and each week some branch of industry is able to report some betterment. While railroad equipment makers have not booked many orders for rolling stock, several have branched out into other lines, with the result that these plants are not faced with slack seasons as in former years. Canadian automobile plants are speeding up operations and in turn are placing orders with other manufacturers for castings, body frames, sheets, bolts, nuts, etc. Improvement in steel consuming lines is reflected in better conditions at steel mills. In addition to the large rail orders which have been placed, there has been better buying of other mill products, with the result that steel plant operations now average between 80 and 100 per cent.

Pig Iron.—Local blast furnace representatives have opened their books for second quarter contracts. So far, however, there has been no rush on the part of melters to cover, although several have come forward with contracts calling for 500 to 5000 tons. Inquiries, however, indicate that considerable business will be placed in this market during the next three months. Spot demand for foundry and malleable iron has also become stronger. Improvement in melt is resulting in more extensive raw material buying, and pig iron sales have increased accordingly. Low prices in the Buffalo market, together with a vigorous selling campaign carried on here by American pig iron interests, are responsible for the prevailing low prices of Canadian iron, and local interests do not expect advances until there has been some change in these conditions.

Prices per gross ton:

| | Delivered Toronto |
|---------------------------------------|-------------------------------------|
| No. 1 foundry, sil. 2.25 to 2.75..... | \$23.60 |
| No. 2 foundry, sil. 1.75 to 2.25..... | 23.60 |
| Malleable | 23.60 |
| | Delivered Montreal |
| No. 1 foundry, sil. 2.25 to 2.75... | \$25.00 to \$25.50 |
| No. 2 foundry, sil. 1.75 to 2.25... | 25.00 to 25.50 |
| Malleable | 25.00 to 25.50 |
| Basic | 24.00 |
| | Imported Iron at Montreal Warehouse |
| Summerlee | 33.50 |
| Carron | 33.00 |

Structural Steel.—Inquiries for structural steel and reinforcing bars are increasing, and in the Toronto district alone building projects already announced call for upward of 25,000 tons of steel. Pending business includes 500 tons for the Electrical and Engineering Building at the Canadian National Exhibition, Toronto; 8000 tons for a new head office building for the Canadian Bank of Commerce, Toronto; 200 tons for an addition to the Patterson Canady factory, Toronto; 200 tons for an addition for Lackie Mfg. Co., Toronto. Several other buildings in Toronto, for which plans have not yet been completed, will require 500 to 5000 tons each.

Old Material.—Sales continue to increase and tonnages placed are larger than they were earlier in the year. Advance buying is again featuring the local market. Prices are firm but unchanged.

Dealers' buying prices:

| | Per Gross Ton | |
|----------------------------|---------------|----------|
| | Toronto | Montreal |
| Heavy melting steel..... | \$9.00 | \$8.00 |
| Rails, scrap | 10.00 | 10.00 |
| No. 1 wrought..... | 9.00 | 11.00 |
| Machine shop turnings..... | 7.00 | 6.00 |
| Boiler plate | 7.00 | 7.00 |
| Heavy axle turnings..... | 7.50 | 7.50 |
| Cast borings | 7.50 | 6.00 |
| Steel turnings | 7.00 | 6.50 |
| Wrought pipe | 5.00 | 6.00 |
| Steel axles | 14.00 | 19.00 |
| Axles, wrought iron..... | 16.00 | 21.00 |
| No. 1 machinery cast..... | 16.00 | 16.00 |
| Stove plate | 12.00 | 12.00 |
| Standard carwheels | 14.50 | 14.50 |
| Malleable | 13.00 | 13.00 |
| | Per Net Ton | |
| No. 1 machinery cast..... | 15.00 | .... |
| Stove plate | 9.00 | .... |
| Standard carwheels | 13.00 | .... |
| Malleable scrap | 13.00 | .... |

Boston

Scrap Price Trend Is Downward—Less Pig Iron Sold

BOSTON, March 13.—Sales of pig iron fell off the past week, and were just under 5000 tons. No large individual sales were made, and Buffalo furnaces and furnaces east of Buffalo again took the bulk of orders. The price situation is still unsettled. On the ordinary run of business, No. 2X Buffalo iron is obtainable at \$16.50 a ton on cars, furnace, and No. 1X at \$17, but on large tonnages these prices have been shaded. One Buffalo furnace is obtaining a limited amount of business at \$17 a ton for No. 2X and \$17.50 for No. 1X. New York State No. 2 plain is generally \$18 a ton on cars, furnace, No. 2X, \$18.50, and No. 1X, \$19. The Mystic Iron Works, Everett, Mass., is meeting prices made by Buffalo stacks. Some interest is still shown in foreign irons, sales the past week including Indian iron equivalent to domestic No. 2X at \$21.75 to \$22 on dock here, duty paid. Sales of eastern and western Pennsylvania, Virginia and Alabama irons are confined to car lots for mixture or special purposes.

Prices of foundry iron per gross ton, delivered to most New England points:

| | |
|-------------------------------------|--------------------|
| Buffalo, sil. 1.75 to 2.25..... | \$21.41 to \$21.91 |
| Buffalo, sil. 2.25 to 2.75..... | 21.41 to 22.41 |
| East. Penn., sil. 1.75 to 2.25..... | 23.15 to 23.65 |
| East. Penn., sil. 2.25 to 2.75..... | 23.65 to 24.15 |
| Virginia, sil. 1.75 to 2.25..... | 25.71 |
| Virginia, sil. 2.25 to 2.75..... | 26.21 |
| Alabama, sil. 1.75 to 2.25..... | 22.91 to 24.77 |
| Alabama, sil. 2.25 to 2.75..... | 23.41 to 25.27 |

Freight rates: \$4.91 from Buffalo, \$3.65 from eastern Pennsylvania, \$5.21 all rail from Virginia, \$6.91 to \$8.77 from Alabama.

Bars.—There is a fair demand for steel bars at 1.90c. per lb., base Pittsburgh, or 2.26½c. delivered common Boston freight rate points. Buying for second quarter has not started. Current reinforcing bar orders are mostly small, but the weekly total is fairly good. The market on reinforcing bars is firm at 1.90c. to 1.95c. per lb., base Pittsburgh, and 2.90c. per lb. from stock here.

Shapes and Plates.—Fabricating prices on jobs of any size are lower than they have been in years owing to keen competition. The largest prospective job calls for 1600 tons of steel for a power house at New Haven, Conn. Small jobs are in fair supply.

Cold-Rolled Strip.—Mills continue to take small orders at 3.15c. per lb., base Pittsburgh. The Worcester, Mass., mill is quoting 3.30c. per lb., base, on lots of 1 to 3 tons, and 3.05c. on larger lots. In the absence of sufficiently large tonnages to test prices, the market appears steady. Mills will open their books for second quarter business within a week.

Coke.—By-product ovens are getting quite a few rush orders for foundry coke, indicating that some

Warehouse Prices, f.o.b. Boston

| | Base per Lb. |
|---------------------------------------|-------------------|
| Plates | 3.365c. |
| Structural shapes— | |
| Angles and beams..... | 3.365c. |
| Tees | 3.365c. |
| Zees | 3.465c. |
| Soft steel bars and small shapes..... | 3.265c. |
| Flats, hot-rolled | 4.15c. |
| Reinforcing bars | 3.265c. to 3.54c. |
| Iron bars— | |
| Refined | 3.265c. |
| Best refined | 4.60c. |
| Norway, rounds | 6.60c. |
| Norway, squares and flats..... | 7.10c. |
| Spring steel— | |
| Open-hearth | 5.00c. to 10.00c. |
| Crucible | 12.00c. |
| Tire steel | 4.50c. to 4.75c. |
| Bands | 4.015c. to 5.00c. |
| Hoop steel | 5.50c. to 6.00c. |
| Cold rolled steel— | |
| Rounds and hexagons..... | *3.45c. to 5.45c. |
| Squares and flats..... | *3.95c. to 6.95c. |
| Toe calk steel..... | 6.00c. |
| Rivets, structural or boiler..... | 4.50c. |
| | Per Cent Off List |
| Machine bolts | 50 and 5 |
| Carriage bolts | 50 and 5 |
| Lag screws | 50 and 5 |
| Hot-pressed nuts | 50 and 5 |
| Cold-punched nuts | 50 and 5 |
| Stove bolts | 70 and 10 |

*Including quantity differentials.

foundries have been holding raw material supplies at a minimum. There is a slight improvement in contract specifications. New England ovens are billing foundry coke at \$11.50 a ton, delivered within a \$3.10 freight rate zone. Domestic coke is moving in large volume and the market is firmer, although not higher; \$8.50 a ton on cars Everett, or its equivalent, is well maintained.

Old Material.—With scrap rails, railroad wrought, skeleton, forge flashings, chemical borings, stove plate and railroad malleable approximately 50c. a ton lower, and with wavering prices on other kinds of scrap, the old material market is weaker than it has been for some time. Offerings of textile machinery cast are in excess of demand. A shipper paid \$9.25 a ton on cars for heavy melting steel, presumably on an old order, but on new business \$9.10 is the best price offered.

Buying prices per gross ton f.o.b. Boston rate shipping points:

| | |
|--|------------------|
| No. 1 heavy melting steel..... | \$9.00 to \$9.10 |
| Scrap T rails..... | 8.00 to 8.50 |
| Scrap girder rails..... | 7.50 to 8.00 |
| No. 1 railroad wrought..... | 10.00 to 10.50 |
| No. 1 yard wrought..... | 8.00 to 8.50 |
| Machine shop turnings..... | 5.75 to 6.25 |
| Cast iron borings (steel works and rolling mill)..... | 6.00 to 6.25 |
| Bundled skeleton, long..... | 5.50 to 6.00 |
| Forged flashings..... | 6.00 to 6.50 |
| Blast furnace borings and turnings..... | 5.75 to 6.25 |
| Forge scrap..... | 6.00 to 6.50 |
| Shafting..... | 13.00 to 13.50 |
| Steel car axles..... | 15.00 to 15.50 |
| Wrought pipe (1 in. in diameter, over 2 ft. long)..... | 7.50 to 8.25 |
| Rails for rolling..... | 10.00 to 10.50 |
| Cast iron borings, chemical..... | 9.00 to 9.50 |

Prices per gross ton delivered consumers' yards:

| | |
|---------------------------|--------------------|
| Textile cast..... | \$13.50 to \$14.00 |
| No. 1 machinery cast..... | 14.50 to 15.00 |
| No. 2 machinery cast..... | 12.50 to 13.00 |
| Stove plate..... | 9.50 to 10.00 |
| Railroad malleable..... | 13.00 to 13.50 |

Buffalo

Steel Operations Continue at High Rate —Pig Iron Quieter

BUFFALO, March 13.—Pig iron inquiry has not been heavy. Most of the larger requirements apparently have been satisfied. A Utica inquiry is for 2000 tons of No. 2 plain and a Rochester consumer seeks 200 to 300 tons of foundry. Another inquiry was for 900 to 1000 tons of foundry and malleable, but this has apparently been withdrawn. In this district \$17 continues firm, though it is being shaded at outside competitive points.

Prices per gross ton, f.o.b. furnace:

| | |
|--|------------------|
| No. 2 plain fdy., sil. 1.75 to 2.25..... | \$17.00 |
| No. 2X foundry, sil. 2.25 to 2.75..... | 17.50 |
| No. 1X foundry, sil. 2.75 to 3.25..... | 18.50 |
| Malleable, sil. up to 2.25..... | \$17.00 to 17.50 |
| Basic..... | 16.50 to 17.00 |
| Lake Superior charcoal..... | 27.28 |

Finished Iron and Steel.—Mill operation continues at a high rate. Prices for most products are firm. Fair demand is reported for bars, shapes and plates and a particularly good demand is noted for automobile body sheets, some of the companies having placed large orders. Reinforcing bar business is brisk. Three Batavia schools will require 154 tons of structural steel. Bids are being taken this week on an addition to the Trico Products Co.'s plant, Buffalo, requiring 225 tons of reinforcing bars.

Old Material.—There have been no important purchases following the tonnage reported last week. Re-

jections on No. 2 grade heavy melting steel are considerable as mills are becoming more exacting on inspections. Prices are a little easier.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

| | |
|---|--------------------|
| Basic Open-Hearth Grades | |
| No. 1 heavy melting steel..... | \$14.75 to \$15.25 |
| No. 2 heavy melting steel..... | 13.00 to 13.50 |
| Scrap rails..... | 13.75 to 14.25 |
| Hydraulic compressed sheets..... | 13.25 to 13.75 |
| Hand bundled sheets..... | 9.00 to 9.50 |
| Drop forge flashings..... | 12.00 to 12.50 |
| No. 1 busheling..... | 13.25 to 13.75 |
| Heavy steel axle turnings..... | 12.50 to 12.75 |
| Machine shop turnings..... | 8.50 to 9.00 |
| Acid Open-Hearth Grades | |
| Railroad knuckles and couplers..... | 15.50 to 16.00 |
| Railroad coil and leaf springs..... | 15.50 to 16.00 |
| Rolled steel wheels..... | 15.50 to 16.00 |
| Low phosphorus billet and bloom ends..... | 17.00 to 17.50 |
| Electric Furnace Grades | |
| Heavy steel axle turnings..... | 12.75 to 13.25 |
| Short shoveling steel turnings..... | 10.75 to 11.25 |
| Blast Furnace Grades | |
| Short shoveling steel turnings..... | 10.50 to 11.00 |
| Short mixed borings and turnings..... | 9.75 to 10.25 |
| Cast iron borings..... | 10.00 to 10.50 |
| No. 2 busheling..... | 9.00 to 9.50 |
| Rolling Mill Grades | |
| Steel car axles..... | 17.00 to 17.50 |
| Iron axles..... | 22.00 to 23.00 |
| No. 1 railroad wrought..... | 12.50 to 13.00 |
| Cupola Grades | |
| No. 1 machinery cast..... | 14.50 to 15.00 |
| Stove plate..... | 13.00 to 13.25 |
| Locomotive grate bars..... | 11.50 to 12.00 |
| Steel rails, 3 ft. and under..... | 17.00 to 17.25 |
| Cast iron car wheels..... | 13.00 to 13.50 |
| Malleable Grades | |
| Railroad..... | 15.00 to 15.25 |
| Agricultural..... | 15.00 to 15.25 |
| Industrial..... | 15.00 to 15.25 |

San Francisco

Aqueducts to Take Large Tonnage —Heavy Building Permits

SAN FRANCISCO, March 10 (By Air Mail).—Outstanding among the awards this week was the placing of 1500 tons of shapes for an office building at Seattle and the award of two storage tanks, calling for 620 tons of plates and shapes, for an oil company in Los Angeles. The trade is particularly interested in an inquiry of the East Bay Municipal Utility District, Oakland, Cal., for two aqueducts involving either 8000 tons of plates or 25,000 tons of cast iron pipe, bids on which will be taken April 20.

Construction activity is being well maintained, and building permits issued during the past month were about on a par with those for the same month last year. For the five leading cities on the Coast the value of the permits issued were as follows:

| | |
|--------------------|-------------|
| Los Angeles..... | \$7,947,728 |
| Seattle..... | 4,126,795 |
| San Francisco..... | 2,398,450 |
| Portland..... | 1,530,325 |
| Oakland..... | 1,349,380 |

Pig Iron.—The market for foundry pig iron is quiet, sales and inquiries being limited to unimportant lots. Imports of iron for the year 1927 on the Pacific Coast totaled 17,673 tons, of which 10,769 tons came from British India, 3876 tons from the Netherlands and 2562 tons from Germany. Interests in the San Francisco district took 8770 tons, and foundries in the Los Angeles district absorbed 6538 tons, the remainder having gone through the ports of Portland and Seattle. Prices are unchanged.

Prices per gross ton at San Francisco:

| | |
|---|--------------------|
| •Utah basic..... | \$25.00 to \$26.00 |
| •Utah foundry, sil. 2.75 to 3.25..... | 25.00 to 26.00 |
| •Indian foundry, sil. 2.75 to 3.25..... | 24.00 to 25.00 |
| •German foundry, sil. 2.75 to 3.25..... | 24.25 |

•Delivered San Francisco.

•Duty paid, f.o.b. cars San Francisco.

Shapes.—In addition to the Seattle office building reported above, 300 tons for an apartment house in San Francisco has been placed with the Herrick Iron Works. Approximately 4000 tons of steel are required in the 2000 underframes for refrigerator cars placed by the Pacific Fruit Express Co., as reported in THE IRON AGE last week. Bids have been opened on 3000 tons for the Coyote Point bridge across San Francisco Bay. Imports during 1927 totaled 34,029 tons, of which 24,812 tons came from Belgian producers, 6866 from French

Warehouse Prices, f.o.b. Buffalo

| | |
|--|--------------|
| | Base per Lb. |
| Plates and structural shapes..... | 3.40c. |
| Soft steel bars..... | 3.30c. |
| Reinforcing bars..... | 2.75c. |
| Cold-finished flats, squares and hexagons..... | 4.45c. |
| Rounds..... | 3.95c. |
| Cold-rolled strip steel..... | 5.85c. |
| Black sheets (No. 24)..... | 4.30c. |
| Galvanized sheets (No. 24)..... | 5.15c. |
| Blue annealed sheets (No. 10)..... | 3.80c. |
| Common wire nails, base per keg..... | \$3.65 |
| Black wire, base per 100 lb..... | 3.90 |

makers and 2083 from German mills. San Francisco interests took 20,123 tons, and Los Angeles buyers imported 7428 tons. Plain material continues firm at 2.35c., c.i.f., for domestic material, with foreign shapes being quoted around 1.55c., c.i.f., duty paid. Prices for fabricated material and fabricated and erected work in the San Francisco district, due to the use of foreign material, are exceptionally low, one apartment job recently going for less than \$75 a ton, erected.

Plates.—Interest now centers on the inquiry for the Sequoia and Wildcat Canyon aqueducts for the East Bay Municipal District, requiring 8000 tons of plates. Bids will be taken on welded steel, lock-bar, cast iron and concrete steel-lined pipe. The pipe ranges in diameter from 50 to 60 in. The Puget Sound Machinery Depot was low bidder on 2000 tons for a penstock at Seattle, Wash. The only award of importance was 620 tons for two 80,000-bbl. tanks for the Western Oil Co. at Los Angeles. It was reported in last week's issue of THE IRON AGE that the Lacy Mfg. Co. secured 400 tons for a penstock for the Southern California Edison Co. This was in error, as another Los Angeles fabricator secured the tonnage. Prices are firm at 2.30c., c.i.f.

Bars.—Bookings of reinforcing steel this week were confined to small lots. Pending business, however, includes several large projects totaling over 16,000 tons. Bids were opened this week on 1950 tons for pier No. 48, San Francisco, and for 1000 tons for the Ocean Beach Esplanade. New inquiries include 5257 tons and 1220 tons respectively for drainage improvement districts Nos. 23 and 22, Los Angeles. Imports of bars, both merchant and reinforcing, totaled 37,220 tons in 1927. Of this total, Belgian mills supplied 22,558 tons, German mills 8459 tons and French makers 4599 tons. Distribution was as follows: San Francisco, 14,463 tons; Portland, 10,431 tons; Los Angeles, 9354 tons, and Seattle, 2972 tons.

Cast Iron Pipe.—One of the largest, if not the largest, inquiry that has ever come up for figures on the Pacific Coast developed this week, and calls for 25,000 tons of 50, 56 and 60-in. pipe for the Sequoia and Wildcat Canyon aqueducts in Oakland, bids on which go in April 20. Awards include 420 tons of 4 to 12-in. pipe for Tucson, Ariz., placed with an unnamed interest; 188 tons of 20-in. Class C for Tacoma, Wash., placed with the United States Cast Iron Pipe & Foundry Co.; and 136 tons of 18-in. Class C pipe for San Diego, Cal., booked by the National Cast Iron Pipe Co. Pending business embraces 500 tons of 10 to 24-in. Class B for Santa Ana, Cal., bids on which go in March 19. The Pacific States Cast Iron Pipe Co. is low bidder on 188 tons of 6 and 8-in. Classes 150 and 250 for the improvement of Municipal District No. 3, Monrovia, Cal. The United States Cast Iron Pipe & Foundry Co. was low bidder on 663 tons of 6 to 20-in. Classes B and C pipe for Santa Barbara, Cal. During the year 1927 imports totaled 37,563 tons. Belgium shipped 14,143 tons, and France, 21,874 tons. The largest portion, 23,824 tons, entered the port of Los Angeles, Seattle took 7025 tons, and San Francisco 6133 tons.

Steel Pipe.—Awards of standard pipe are limited to small lots. New inquiries include 360 tons of 8-in. steel pipe for Los Angeles, bids on which will be taken March 13, and 100 tons of 6 and 8-in. standard pipe, lapweld, for Monrovia, Cal., on which the Santa Fe Pipe & Supply Co. is low. Imports of tubular products, exclusive of cast iron pipe, aggregated 39,167 tons during the past year, and of this amount 21,027 tons originated in Germany. Los Angeles consumers took 31,296 tons of the total.

Warehouse Prices, f.o.b. San Francisco

| | Base per Lb. |
|--|--------------|
| Plates and structural shapes..... | 3.15c. |
| Soft steel bars | 3.15c. |
| Small angles, $\frac{3}{8}$ -in. and over..... | 3.15c. |
| Small angles, under $\frac{3}{8}$ -in. | 3.55c. |
| Small channels and tees, $\frac{3}{8}$ -in. to 2 $\frac{3}{4}$ -in. | 3.75c. |
| Spring steel, $\frac{1}{4}$ -in. and thicker..... | 5.00c. |
| Black sheets (No. 24) | 4.95c. |
| Blue annealed sheets (No. 10)..... | 3.90c. |
| Galvanized sheets (No. 24)..... | 5.50c. |
| Structural rivets, $\frac{1}{2}$ -in. and larger..... | 5.65c. |
| Common wire nails, base per keg..... | \$3.40 |
| Cement coated nails, 100-lb. keg..... | 3.40 |

Coke.—Demand for foundry coke is quiet, and sales and inquiries involved unimportant lots. During the year 1927, 58,452 tons of foreign material was imported at Coast ports. The United Kingdom shipped 17,218 tons, and Germany, 32,179 tons. Los Angeles foundries took 21,410 tons, San Francisco interests took 26,803 tons, and Seattle melters, 6315 tons. Prices continue unchanged.

Cincinnati

Pig Iron Market More Active—Sheet Mills Continue High Operations

CINCINNATI, March 13.—Increased activity in the pig iron market is reflected by both sales and inquiries. Among sales were 1000 tons of malleable for a southern Ohio consumer and 500 tons of foundry for a Parkersburg, W. Va., company. Pending business is the largest in several months. The Marmon Motor Car Co., Indianapolis, is expected to buy 3000 tons of malleable and the Servel Corporation, Evansville, Ind., is asking for 1000 to 1500 tons of malleable. Competition between northern Ohio producers and those in this district is keen. A sale of 300 tons of foundry iron is reported to have been made to a local melter by a Lake Erie furnace at a base price of \$16.75, furnace. Makers at Ironton continue to quote \$19, base furnace, but are losing much tonnage, which is being purchased elsewhere at lower figures. Tennessee and Alabama irons are firm at \$16, base Birmingham, while Jackson County silvery iron also is steady at \$25, Jackson, for 8 per cent.

Prices per gross ton, delivered Cincinnati:

| | |
|---------------------------------------|------------------|
| So. Ohio fdy., sil. 1.75 to 2.25.... | \$20.89 |
| So. Ohio malleable | \$20.14 to 20.89 |
| Alabama fdy., sil. 1.75 to 2.25.... | 19.69 |
| Alabama fdy., sil. 2.25 to 2.75.... | 20.19 |
| Tennessee fdy., sil. 1.75 to 2.25.... | 19.69 |
| Southern Ohio silvery, 8 per cent .. | 26.89 |

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

Reinforcing Bars.—New billet bars are quoted at 1.90c. to 2c., base Pittsburgh, with most material being sold at the lower price. Rail steel makers are asking 1.85c., base mill, and are getting that amount for small tonnages, but sizable lots are being taken at 1.80c.

Warehouse Business.—There has been a slight increase in the volume of orders placed with local jobbers, but tonnage in the aggregate is still below the normal level for this time of the year. Prices are firm and unchanged.

Finished Material.—As the end of the first quarter approaches specifications against old contracts at low prices are growing heavier, and many customers will enter the new quarter with plenty of material on hand to care for their needs through the month of April. This is especially true of the larger buyers. Bars, structural shapes and plates are becoming more firmly established on the basis of 1.90c., Pittsburgh, which is being quoted by all mills. The structural steel market still shows a tendency to lag behind the normal scale of operations for March. Activity in sheets continues to afford encouragement to producers, who are well satis-

Warehouse Prices, f.o.b. Cincinnati

| | Base per Lb. |
|--|-----------------------|
| Plates and structural shapes..... | 3.40c. |
| Bars, soft steel or iron..... | 3.30c. |
| New billet reinforcing bars..... | 3.15c. |
| Rail steel reinforcing bars..... | 3.00c. |
| Hoops | 4.00c. to 4.25c. |
| Hands | 3.95c. |
| Cold-finished rounds and hexagons..... | 3.85c. |
| Squares | 4.35c. |
| Black sheets (No. 24) | 4.05c. |
| Galvanized sheets (No. 24)..... | 4.90c. |
| Blue annealed sheets (No. 10)..... | 3.60c. |
| Structural rivets | 3.85c. |
| Small rivets | .65 per cent off list |
| No. 9 annealed wire, per 100 lb. | \$3.00 |
| Common wire nails, base per keg..... | 2.95 |
| Cement coated nails, base 100 lb. keg..... | 2.95 |
| Chain, per 100 lb..... | 7.55 |
| | Net per 100 Ft. |
| Lap-welded steel boiler tubes, 2-in. | \$18.00 |
| 4-in. | 38.00 |
| Seamless steel boiler tubes, 2-in. | 19.00 |
| 4-in. | 39.00 |

fied with the amount of material which has been sold in the past two weeks. Automobile makers are taking liberal tonnages, but are doing little forward buying, preferring instead to hold purchases down to current requirements. The stability of prices is a feature of the sheet market, blue annealed being steady at 2.10c., base Pittsburgh, black at 2.90c., automobile body sheets at 4.15c., and galvanized at 3.75c. Mills are operating at 100 per cent of capacity, and orders in hand are sufficient to insure the maintenance of production on the present basis for from two to three weeks. The movement of wire goods is considered fairly good, the demand for common wire nails having been brisk. Plain wire is selling at \$2.50 per 100 lb., Ironton or Pittsburgh, and common wire nails at \$2.65 per keg, Ironton or Pittsburgh. Sellers of cold-rolled bars report that bookings have been of fairly good volume.

Coke.—Specifications of by-product foundry coke from foundries making automobile castings have been heavy and in a few cases orders at hand are greater than producers can supply within the time specified. On the other hand, there has been a seasonal decline in the demand for domestic grades. A drop in prices of by-product domestic coke about April 1 is regarded as a possibility. One reason for such expectation is severe competition, especially in western Ohio and Indiana, which companies at Indianapolis, Portsmouth and Ashland have encountered from coke originating in the Youngstown, Canton and Massillon districts. Another reason is that sales of domestic coke in the past year have been below normal.

Foundry coke prices per net ton, delivered Cincinnati: By-product coke, \$9.52 to \$9.64; Wise County coke, \$7.59 to \$8.09; New River coke, \$10.09 to \$10.59. Freight rates, \$2.14 from Ashland, Ky.; \$2.59 from Wise County and New River ovens.

Old Material.—Shipments on contracts to district steel plants have been moderate and foundries are taking only a fair amount of material. Prices are firm and little change is anticipated in the immediate future. The Southern, Louisville & Nashville and Chesapeake & Ohio railroads have their usual monthly lists, which close this week.

Dealers' buying prices per gross ton f.o.b. cars, Cincinnati:

| | | |
|-------------------------|-------|--------------------|
| Heavy melting steel | ..... | \$11.00 to \$11.50 |
| Scrap rails for melting | ..... | 11.75 to 12.25 |
| Loose sheet clippings | ..... | 8.50 to 9.00 |
| Bundled sheets | ..... | 9.50 to 10.00 |
| Cast iron borings | ..... | 8.00 to 8.50 |
| Machine shop turnings | ..... | 7.50 to 8.00 |
| No. 1 busheling | ..... | 10.00 to 10.50 |
| No. 2 busheling | ..... | 7.00 to 7.50 |
| Rails for rolling | ..... | 12.50 to 13.00 |
| No. 1 locomotive tires | ..... | 12.75 to 13.25 |
| No. 1 railroad wrought | ..... | 10.50 to 11.00 |
| Short rails | ..... | 16.00 to 16.50 |
| Cast iron carwheels | ..... | 12.25 to 12.75 |
| No. 1 machinery cast | ..... | 15.50 to 16.00 |
| No. 1 railroad cast | ..... | 13.00 to 13.50 |
| Burnt cast | ..... | 7.50 to 8.00 |
| Stove plate | ..... | 8.25 to 8.75 |
| Brake shoes | ..... | 9.50 to 10.25 |
| Railroad malleable | ..... | 12.25 to 12.75 |
| Agricultural malleable | ..... | 11.75 to 12.25 |

Commerce Commission to Consider Youngstown-Ohio River Railroad

WASHINGTON, March 13.—Reply is expected to be made within three or four weeks by the Pittsburgh, Lisbon & Western Railroad to the questionnaire of the Interstate Commerce Commission regarding the application of the carrier for permission to build two branch lines with a total of 40 miles trackage, which would provide direct rail connection between Youngstown and the Ohio River. The answer of the railroad, owned by the Pittsburgh Coal Co., will show the business the line expects together with its amount and character. Inasmuch as it will tap the Valley district through rail and water connection, development of substantial iron and steel tonnage with attractive rates is looked for, as well as lowering of rates on coal and coke into the Youngstown or Valley district from the Pittsburgh district.

Preliminary invitations to the World Engineering Congress, to be held at Tokio, Japan, in October, 1929, have been issued by the American Committee of the Congress. Maurice Holland, 29 West Thirty-ninth Street, New York, is secretary of the committee.

Detroit

Steady Gains in Automobile Production—95,000 Now on Ford Payroll

DETROIT, March 13.—The steel market here continues more than good. Production schedules in the automotive industry are still increasing, and the outlook for the next few months is very promising. The Hupp Motor Car Co. broke all production records in February with an output of 5214 cars. This compares with 4016 cars in February, 1927, and 3610 cars in January, 1928. In spite of this record the company has on its books about 3000 unfilled orders from the past month's sales. The projected schedule for March is 7000 cars.

The Oakland Motor Car Co. started February with a projected production schedule of 22,268 cars, which was later raised to 25,000, and again to 26,200, which is the final figure for last month. This may be compared with the January production of 19,273. The March quota as now set stands at 27,773 cars, which will be more than 10,000 units ahead of the March figure for 1927.

The Hudson Motor Car Co. established a new record in February with a volume of 30,300 cars. Their January production was 25,390 cars. The March schedule calls for a somewhat greater output than the February production.

The Packard Motor Car Co. turned out 4400 cars during the past month, which shows a sharp increase over that of February, 1927, when 2186 cars were produced.

The March production for the Chevrolet Motor Car Co. reached a new peak of 116,943. This figure represented an increase from a previous schedule of 110,000 cars for the month. Production for February last year totaled only 85,817. The schedule for this month is set at 135,000, having been increased from 127,000 cars.

February records were broken by the Willys-Overland Co. with a production of 25,000 units. At the close of the month this company was turning out about 1200 cars a day.

Output by Dodge Brothers, Inc., totaled 20,727 cars and trucks during February, comparing favorably with 12,764 units in the month previous and 16,463 in February of last year. The rate of production March 1 is given at 1650 units per day.

The Buick Motor Co.'s February production totaled 18,600, or better than 1500 cars more than in January. The projected schedule for March is now set at 20,000 units.

Production of the Cadillac Motor Car Co. in February was 44 per cent greater than for any previous February in the company's history.

The output of the Ford Motor Co. is probably more than 1200 units a day, with the 2000 mark only a short distance ahead. Employees in the Ford Motor Co. increased 1369 during the past week. This brings the total up to 95,369 and compares favorably with 52,000 a year ago and the peak of 108,000 in 1926.

Prices on Nos. 9 and 10 blue annealed sheets range from 2.10c. to 2.20c., Pittsburgh. Automobile body sheets are quoted at 4.15c., Pittsburgh.

There is no particular change in the structural market. Prices on plain material remain firm at 1.85c. to 1.90c., Pittsburgh.

Shipments of pig iron in the district promise to be on a par with those of March, 1927, which was the highest melting month during the past year.

There have been no further changes in the prices on old material in this district during the past week. Very few sales have been reported.

Dealers' buying prices per gross ton, f.o.b. cars, Detroit:

| | | |
|-----------------------------------|-------|--------------------|
| Heavy melting and shoveling steel | ..... | \$11.00 to \$11.50 |
| Borings and short turnings | ..... | 7.25 to 7.75 |
| Long turnings | ..... | 6.75 to 7.25 |
| No. 1 machinery cast | ..... | 14.00 to 15.00 |
| Automobile cast | ..... | 19.50 to 21.00 |
| Hydraulic compressed sheets | ..... | 9.75 to 10.25 |
| Stove plate | ..... | 11.00 to 12.00 |
| No. 1 busheling | ..... | 8.50 to 9.00 |
| Sheet clippings | ..... | 6.00 to 7.00 |
| Flashings | ..... | 9.25 to 9.75 |

NON-FERROUS METAL MARKETS

| The Week's Prices | Cents per Pound for Early Delivery | | | | | |
|-------------------------------|--|---------|---------|--------|--------|--------|
| | Mar. 13 | Mar. 12 | Mar. 10 | Mar. 9 | Mar. 8 | Mar. 7 |
| Lake copper, New York.... | 14.25 | 14.25 | 14.25 | 14.25 | 14.25 | 14.25 |
| Electrolytic copper, N. Y.*.. | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 | 14.00 |
| Straits tin, spot, N. Y..... | 50.12½ | 50.87½ | .... | 51.25 | 51.37½ | 51.37½ |
| Lead, New York..... | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 |
| Lead, St. Louis..... | 5.82½ | 5.82½ | 5.82½ | 5.85 | 5.85 | 5.85 |
| Zinc, New York..... | 6.00 | 6.00 | 5.97½ | 5.97½ | 5.95 | 5.90 |
| Zinc, St. Louis..... | 5.65 | 5.65 | 5.62½ | 5.62½ | 5.60 | 5.55 |

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, March 13.—Prices in all markets but tin are strong and demand is fairly good. Copper prices are firm in a quiet market. Quotations for tin are lower and buying is moderate. Prices for both lead and zinc have advanced and consumer buying has been good.

Copper.—Purchases of electrolytic copper for both domestic and foreign consumption have been quite heavy the last week. Foreign buying has predominated. Today demand turned quiet but prices remain exceedingly firm at 14.12½c., delivered in the Connecticut Valley. Practically no metal is obtainable at concessions and the sales referred to have been made in nearly every case at the firm quotation maintained by all producers. Statistics for February appeared today and showed a decrease in stocks of refined metal and an increase in copper in blister form, one practically offsetting the other. Deliveries into consumption were close to 135,000 tons, the largest in many months, and probably a record for February since the war. There is no change in the official price of Copper Exporters, Inc., which stands at 14.50c., c.i.f. European ports. Lake copper is moderately active and steady at 14.25c., delivered.

Tin.—Sales for the week ended Saturday, March 10, were light at about 850 tons. The market as a whole has been featureless both here and abroad, with sentiment veering easily. Transactions have been confined almost entirely to dealers and the decline in prices,

which has been fairly sharp both in London and New York, has been due largely to lack of support by consumers. Today's London prices declined £4 per ton from yesterday's and prices stood at £224 10s. for spot standard, £226 15s. for future standard, and £228 10s. for spot Straits. These values are £7 to £8 per ton less than a week ago. The Singapore price was £232 5s. Today the market was exceedingly active, 500 to 600 tons being bought by both consumers and dealers. Spot Straits tin was quoted at 50.12½c., New York. The rumor, which was active some time ago, that consumers were to form a pool for the purchase of their requirements has again been revived, but no details are obtainable. Arrivals thus far this month have been 2865 tons, with 7760 tons reported afloat.

Lead.—Purchases were fairly heavy during the week ended Saturday, March 10, but thus far this week the market has been quiet. A moderate business is being done each day, principally for March-April delivery. The quotation of the leading interest continues unchanged at 6c., New York, and in the outside market prices are a little easier at 5.80c. to 5.85c., St. Louis.

Zinc.—Advancing prices of ore have stimulated those for prime Western slab zinc and quotations are about ¼c. higher than those recently touched. Buying has been fairly brisk, but has quieted down the last day or two, partly because sellers are restricting their offerings. For March and early April delivery, the market is quoted at 5.65c., St. Louis, or 6c., New York, and is very firm at these levels. Possibly 5.67½c., St. Louis, could be obtained. Ore advanced to \$38 on March 10 and higher prices are expected this week. Production, contrary to expectations, continued heavy, but the promised curtailment is looked for this week. The ore has not been freely offered, sales being only about 9500 tons, with production over 12,000 tons. Statistics for February showed a reduction in stocks of refined

Metals from New York Warehouse

Delivered Prices Per Lb.

| | |
|--|--------------------|
| Tin, Straits pig..... | 52.50c. to 53.50c. |
| Tin, bar | 54.50c. to 55.50c. |
| Copper, Lake | 15.25c. |
| Copper, electrolytic | 15.00c. |
| Copper, casting | 14.25c. |
| Zinc, slab | 6.75c. to 7.25c. |
| Lead, American pig..... | 7.00c. to 7.50c. |
| Lead, bar | 9.25c. to 10.25c. |
| Antimony Asiatic..... | 12.50c. to 13.00c. |
| Aluminum No. 1 ingot for remelting (guaranteed over 99 per cent pure)..... | 27.00c. to 28.00c. |
| Aluminum ingots, No. 12 alloy..... | 26.00c. to 27.00c. |
| Babbitt metal, commercial grade..... | 30.00c. to 40.00c. |
| Solder, ½ and ½..... | 33.50c. to 34.50c. |

Metals from Cleveland Warehouse

Delivered Prices Per Lb.

| | |
|----------------------------------|---------|
| Tin, Straits pig..... | 56.50c. |
| Tin, bar | 58.50c. |
| Copper, Lake | 15.00c. |
| Copper, electrolytic | 15.00c. |
| Copper, casting | 14.25c. |
| Zinc, slab | 7.50c. |
| Lead, American pig | 6.85c. |
| Antimony, Asiatic | 16.00c. |
| Lead, bar | 9.25c. |
| Babbitt metal, medium grade..... | 19.25c. |
| Babbitt metal, high grade..... | 61.50c. |
| Solder, ½ and ½..... | 33.75c. |

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base Per Lb.*

| | |
|--|----------------------|
| Sheets— | |
| High brass..... | 18.50c. to 19.25c. |
| Copper, hot rolled..... | 22.75c. to 23.75c. |
| Copper, cold rolled, 14 oz. and heavier..... | 25.25c. to 26.25c. |
| Seamless Tubes— | |
| Brass | 23.37½c. to 24.37½c. |
| Copper | 24.50c. to 25.50c. |
| Brazed Brass Tubes..... | 26.50c. to 27.50c. |
| Brass Rods | 16.25c. to 17.25c. |

From New York Warehouse

Delivered Prices, Base Per Lb.

| | |
|----------------------------------|--------------------|
| Zinc sheets, (No. 9), casks..... | 10.00c. to 10.50c. |
| Zinc sheets, open..... | 10.50c. to 11.00c. |

Non-Ferrous Rolled Products

Mill prices on non-ferrous products have not changed. Quotations on bronze, brass and copper products were last revised more than three months ago, while lead full sheets and zinc sheets were reduced on Feb. 21 and 27 respectively.

List Prices, Per Lb., f.o.b. Mill

On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over

| | |
|---------------------------|-------------------|
| Sheets— | |
| High brass | 18.75c. |
| Copper, hot rolled | 22.75c. |
| Zinc | 9.50c. |
| Lead (full sheets)..... | 9.75c. to 10.00c. |
| Seamless Tubes— | |
| High brass | 23.62½c. |
| Copper | 24.50c. |
| Rods— | |
| High brass | 16.50c. |
| Naval brass..... | 19.25c. |
| Wire— | |
| Copper | 15.75c. |
| High brass | 19.25c. |
| Copper in Rolls | 21.75c. |
| Brazed Brass Tubing | 26.75c. |

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

| | |
|--|---------|
| Sheets, 6 to 10 gage, 3 to 30 in. wide.... | 33.00c. |
| Tubes, base | 42.00c. |
| Machine rods..... | 34.00c. |

Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Consumers' Doors in City Limits)

| Sheets— | Base per Lb. |
|--|--------------|
| High brass | 18.75c. |
| Copper, hot rolled..... | 22.75c. |
| Copper, cold rolled, 14 oz. and heavier..... | 25.00c. |
| Zinc | 11.00c. |
| Lead, wide | 9.75c. |
| Seamless Tubes— | |
| Brass | 25.12½c. |
| Copper | 26.00c. |
| Brazed Brass Tubes..... | 26.75c. |
| Brass Rods | 16.50c. |

metal of about 800 tons, but this was considered significant because it is the first reduction in a long period.

Nickel.—Ingot nickel in wholesale lots is quoted at 35c., with shot nickel at 36c. and electrolytic nickel at 37c. per lb.

Antimony.—Buying has been fairly good and prices are a little higher, with Chinese metal quoted at 10.50c., New York, duty paid, for all positions.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 23.90c. per lb., delivered.

Non-Ferrous Metals at Chicago

CHICAGO, March 13.—Demand for copper is steady and prices are firm. Sales of lead and zinc are brisk and quotations have advanced. Prices for tin continue to sag under the influence of foreign markets. The old metal market is quiet.

Prices, per lb., in carload lots: Lake copper, 14.25c.; tin, 52.50c.; lead, 5.925c.; zinc, 5.75c.; in less-than-carload lots, antimony, 12.50c. On old metals we quote copper wire, crucible shapes and copper clips, 10.50c.; copper bottoms, 9.50c.; red brass, 9.25c.; yellow brass, 7c.; lead pipe, 4.75c.; zinc, 3.25c.; pewter, No. 1, 30c.; tin foil, 36c.; block tin, 45c.; aluminum, 11.75c.; all being dealers' prices for less-than-carload lots.

REINFORCING STEEL

New York Warehouse Takes 1500 Tons—Sizable Projects in New Work

AWARDS of concrete reinforcing bars, as reported to THE IRON AGE in the last week, amounted to 4500 tons, outstanding among which was a warehouse in New York which took 1500 tons. Three projects requiring more than 1000 tons each brought the total of new work to 4700 tons. Awards follow:

BOSTON, 150 tons, North Station, to Joseph T. Ryerson & Son, Inc., Boston.
BURLINGTON, VT., 100 tons, bridge, to Edward A. Tucker Co.
NEW YORK, 1500 tons, Eieto warehouse, from White Construction Co., general contractor, to Truscon Steel Co.
PHILADELPHIA, 800 tons, Quaker City Cold Storage Co. building, to Kalman Steel Co.
BUFFALO, 100 tons, pack house for Huron Cement Co., to a local maker.
STATE OF ILLINOIS, 300 tons of rail steel bars for road work, to Calumet Steel Co.
CHICAGO, 100 tons of rail steel bars, apartment building at Seventy-fifth Street and South Shore Drive, to Inland Steel Co.
CHICAGO, 110 tons, arcade building on Thirty-seventh Street, to Kalman Steel Co.
CHICAGO, 350 tons of rail steel bars, Steuben Club, to Inland Steel Co.
CHICAGO, 300 tons, superstructure for Women's Athletic Club, to Olney J. Dean & Co.
MILWAUKEE, 440 tons, public school, to Concrete Steel Co.
ST. LOUIS, 440 tons; 280 tons for southern approach to municipal bridge across Mississippi River, and 260 tons for Jefferson Plaza garage, to Missouri Rolling Mills Corporation.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

BOSTON, 500 tons, United Shoe Machinery Corporation office building.
BETHLEHEM, PA., 100 tons, Lehigh University building; bids in.
CUMBERLAND, MD., 180 tons, hospital, general contractor George A. Fuller Co.

Old Metals, Per Lb., New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators and the selling prices are those charged consumers after the metal has been properly prepared for their use.

| | Dealers' Buying Prices | Dealers' Selling Prices |
|---|------------------------|-------------------------|
| Copper, heavy crucible..... | 12.00c. | 13.50c. |
| Copper, heavy and wire..... | 11.75c. | 12.875c. |
| Copper, light and bottoms... | 10.00c. | 11.25c. |
| Brass, heavy | 7.00c. | 8.50c. |
| Brass, light | 6.00c. | 7.50c. |
| Heavy machine composition. | 9.50c. | 10.625c. |
| No. 1 yellow brass turnings. | 7.75c. | 9.00c. |
| No. 1 red brass or composition turnings | 8.75c. | 9.75c. |
| Lead, heavy | 5.00c. | 5.50c. |
| Lead, tea | 4.00c. | 4.50c. |
| Zinc | 3.25c. | 3.75c. |
| Sheet aluminum..... | 12.50c. | 14.50c. |
| Cast aluminum | 12.50c. | 14.50c. |

WASHINGTON, 1050 tons of 30-ft. round deformed bars for Panama Canal, delivery at Balboa or Cristobal; bids to be opened March 15.

BUFFALO, 225 tons, addition for Trico Products Co.; bids taken this week.

CLEVELAND, 1000 tons, two store buildings and warehouses for Sears, Roebuck & Co.

CLEVELAND, 100 tons, building for Cleveland Clinic.

AKRON, OHIO, 300 tons, garage.

LOS ANGELES, 1220 tons, Drainage Improvement District No. 22; bids April 9.

RAILROAD EQUIPMENT

Chicago & North Western Will Buy 1000 Automobile Car Bodies—12 Locomotives Placed

WITH inquiry for 1000 automobile car bodies from the Chicago & North Western, 250 automobile and 175 oil cars from the Southern Pacific and 192 gondolas from the Detroit & Toledo Shore Line, railroad business in prospect is somewhat larger than in recent weeks. The locomotive market has been featured by the purchase of 10 locomotives by the New York Central and an inquiry for eight switching units from the Chicago, St. Paul, Minneapolis & Omaha. Details of the week's business follow:

New York Central has ordered five Hudson-type and five suburban type locomotives for service on the Boston & Albany from American Locomotive Co.

Chicago, St. Paul, Minneapolis & Omaha is inquiring for eight 8-wheel switching locomotives.

Illinois Terminal Co. has ordered one Mogul-type locomotive from Baldwin Locomotive Works.

City of Seattle has ordered one Prairie-type locomotive from Baldwin Locomotive Works.

Union Refrigerator Transit Co. has placed an order for 50 refrigerator cars with American Car & Foundry Co.

Chicago & North Western has made inquiry for 1000 automobile car bodies.

Safety Car Heating & Lighting Co. has ordered 30 special refrigerator cars without ice bunkers from American Car & Foundry Co.

Detroit & Toledo Shore Line is inquiring for 192 50-ton gondola cars.

Chicago, Rock Island & Pacific has ordered 10 suburban cars from Standard Steel Car Co., 10 coaches from Pullman Car & Mfg. Corporation and 10 baggage and six baggage-mail cars from American Car & Foundry Co.

Southern Pacific will buy 250 automobile cars and 175 oil cars.

Northern Pacific will purchase 50 caboose car underframes.

The March meeting of the Pittsburgh Foundrymen's Association, at the Fort Pitt Hotel, Pittsburgh, Monday evening, March 19, will be featured by the presentation of a five-reel film, "Jewels of Industry," by Vernon W. Wells, of the Carborundum Co., Niagara Falls, N. Y. The film depicts the development of electric energy from Niagara Falls, the electric furnaces used in the manufacture of carborundum and aloxite and the uses of these grinding materials.

TO STUDY GRAY IRON FOUNDRY

Institute Formed at Pittsburgh to Study Problems Aims to Correct Economic Ills of Industry

PITTSBURGH, March 13.—Forty-six gray iron foundrymen from 14 States met here today at the Carnegie Institute of Technology and founded an organization which it is believed will provide the means for not only correcting the evils which have beset the gray iron casting industry for several years but for restoring it to its former prominent place in the general iron and steel industry. The new body, to be known as the American Gray Iron Institute, is to consist exclusively of those engaged in the production of gray iron castings. In a resolution offered by Walter Seelbach, Walworth Run-Forest City Foundry Co., Cleveland, and unanimously adopted, the following purposes of the organization were included:

An intensive study to increase the quality of gray iron castings and of increasing their utilization by industry, and a study of foundry costs.

A study of hand-to-mouth buying to ascertain whether it is here to stay.

A study of the over-production facilities at present existing in the foundry industry.

A study of new methods for merchandising the production of gray iron castings.

A study of methods to strengthen present markets for gray iron.

The development of new markets and ascertaining new products for manufacture.

A study relating to the liquidation of unprofitable foundries and their space turned into other channels.

A study of the possibility of consolidation or merging and strengthening of foundries.

Discouraging further building of additional foundry capacity for some years.

Encouraging users of castings who at present operate foundry departments to abandon these foundry departments if possible and again purchase their castings in the open market.

The use of advertising and publicity in its many ways for the purpose of enhancing the use and purchase of the product.

B. H. Johnson, Cresson, Morris & Co., Philadelphia, was chairman of the meeting and D. M. Avey, editor *Foundry*, Cleveland, was secretary. A committee on organization was appointed to meet subject to call and it will offer its report at a meeting to be held during the annual convention of the American Foundrymen's Association in Philadelphia in the week of May 14.

The gathering brought together those active in the industry from all parts of the country for what proved to be a thorough-going discussion of the problems of the gray iron castings and their market. C. E. Hoyt, Chicago, secretary American Foundrymen's Association, was present and expressed not only the interest of that organization in the new body, but extended its cooperation in its efforts. W. H. Barr, president National Founders' Association, brought a similar message.

Walter Wood, R. D. Wood & Sons, Philadelphia; A. F. Jensen, Hanna Engineering Works, Chicago; Dr. Richard Moldenke (in letter read by J. L. Carter, Barlow Foundry Co., Newark, N. J.; A. J. Tuscany, secretary Ohio Foundrymen's Association, and J. T. McKenzie, American Cast Iron Pipe Co., Birmingham, were among those who contributed to the discussion of the need of such an organization as the meeting had been called to formulate and pointed out what should be its functions.

OBITUARY

CHARLES D. MASON, secretary of the Cleveland-Cliffs Iron Co., Cleveland, died March 7 of pneumonia after an illness of three weeks, aged 53 years. He had been connected with the Cleveland-Cliffs company 26 years, having started as an auditor in the blast furnace department at Gladstone, Mich. He was transferred to Cleveland as assistant auditor of the company in 1911 and was made secretary in 1926.

JONATHAN DIXON MAXWELL, a pioneer automobile manufacturer of the United States, died on March 8 at his home at Worton Manor, Md. He was born in Indiana in 1864, and after learning the machinist's trade became associated with Elmer Apperson in a bicycle repair shop at Kokomo, Ind. Here, in association with Mr. Apperson and Elwood Haynes, he carried on experiments which led to the building of what is thought to have been the first automobile constructed in this country. Mr. Maxwell then went to Montreal, where he experimented with motor-driven tractors. He next became associated with R. E. Olds in the development of the Oldsmobile car. Finally establishing his own factory at Tarrytown, N. Y., he brought out the Maxwell automobile, and when the United States Motors Co. was formed he became vice-president. Mr. Maxwell retired from active business 15 years ago.

ALFRED E. TRYON, since 1908 treasurer and manager of the Vermont Construction Co., Inc., Burlington, Vt., died on Feb. 29, at Roanoke, Va., following an operation. He was 69 years of age.

WILLIAM E. WIGHTMAN, treasurer New Departure Mfg. Co., Bristol, Conn., died at his home in that city, March 7. He was born in South Meriden, Conn., in 1868, and at one time was associated with the Russell & Erwin Co. In 1903 he went with the New Departure company and became treasurer about 11 years ago.

LAZARD KAHN, president of the Estate Stove Co., Hamilton, Ohio, died at his home in Cincinnati, March 7. With his brothers, Felix and Samuel, he became associated with an old firm of stove founders at Hanging Rock, Ohio, in 1873, and in 1881 he and his brother Felix bought the business and continued to operate it under the name of F. and L. Kahn Brothers, with offices in Cincinnati. In 1884 the company erected a plant at Hamilton, but still retained its general offices at Cincinnati. The business was incorporated as the Estate Stove Co. in 1906, and the general offices were removed to Hamilton. Mr. Kahn was born in Alsace in 1850. At the International Exposition in Paris in 1900 he was a juror of awards, and a year later was made a Chevalier of the Legion of Honor of France. As president of the Estate Stove Co. he was active until about a year ago.

C. ARTHUR SCHOESSEL, general superintendent of the John Deere Harvester Works, East Moline, Ill., died on March 8 at his home in Rock Island, Ill., aged 37 years. He had been associated with the John Deere industries for 15 years, having been transferred a few years ago from the Deere & Co. plant to the East Moline harvester works. He advanced from one plant executive position to another until he became general superintendent.

Electric industrial trucks and tractors to the number of 120 were shipped in February, as against 112 in January, according to reports received by the Department of Commerce from nine leading manufacturers. Of the February shipments, 102 units were for domestic use, 15 being tractors and 87 trucks. Shipments abroad included 18 units.

The Western Machine Tool Works, Holland, Mich., has appointed Manning, Maxwell & Moore, Inc., Chicago, agent in that territory for its radial drills and tappers.

PERSONAL

J. C. Gore, whose appointment as general sales manager of the St. Louis Gas & Coke Corporation, 1502 Telephone Building, St. Louis, to succeed Walter H. Underwood, was mentioned in THE IRON AGE of March 1, began his career in the pig iron business in 1906 as secretary to James Bonnyman, vice-president of the old Birmingham Coal & Iron Co., Birmingham. When that company was taken over by the Woodward Iron Co., Birmingham, Mr. Gore went to Cincinnati, where he became associated with the Domhoff & Joyce Co., Cincinnati, former sales agent for the Birmingham Coal & Iron Co. He remained with the Domhoff & Joyce organization for 12 years, two years at Cincinnati, eight years at Indianapolis and two years as manager of the company's Chicago office. He joined the St. Louis Gas & Coke Co. in 1923 as assistant sales manager at Chicago, and was transferred to the St. Louis office on July 1, 1927.



J. C. GORE

E. A. Lerner has been made vice-president of the Kensington Steel Co., Chicago, rather than president as announced recently in these columns.

J. L. Gregg, metallurgical engineer Western Electric Co., Chicago, addressed the Chicago Foundrymen's Club, March 10, on "Metallography."

Robert T. Rossell, vice-president of the Bessemer & Lake Erie Railroad, a subsidiary of the United States Steel Corporation, has been elected president to succeed the late James H. Reed.

Harold Strouse, advertising manager Harnischfeger Corporation, Milwaukee, has been elected president of the Milwaukee Association of Industrial Advertisers, succeeding the late Howard A. Winton, of the Heil Co.

Floyd W. Moore has been made manager of the Vermont Construction Co., Inc., Burlington, Vt., to succeed the late Alfred E. Tryon. He is a graduate of Syracuse University and has been chief engineer of the Burlington company since 1924.

Charles L. Allen, president and general manager of the Norton Co., Worcester, Mass., on March 6, his seventieth birthday, was presented with a bronze statuette, "The Scout," by employees of the company. He has been general manager of the company for 43 years and president for 10 years.

George B. Michie has been appointed Western representative of the Niagara Falls Smelting & Refining Corporation, Buffalo, and will have headquarters in Chicago.

Charles B. Acheson has been made district manager of a sales office opened at 122 South Michigan Avenue, Chicago, by the Erie City Iron Works, Erie, Pa. J. R. LeValley has been assigned to the office as special engineer and D. F. Lytle as sales representative. E. J. Clerget will be in charge of a sub-office at 511 Traction Terminal Building, Indianapolis.

Jordan Korp, of the Leeds & Northrup Co., Philadelphia, addressed the Indianapolis chapter of the American Society for Steel Treating on March 12. His subject was "Pyrometers and Furnaces." At a

meeting on April 9 T. D. Taylor, metallurgist of the Bliss & Laughlin Steel Corporation, Chicago, will be the speaker.

James T. Lee and John O. Clark, of Lee & Clark, Inc., Chicago, have become associated with the Adkins, Young & Allen Co., 32 South Jefferson Street, Chicago, dealers in pumps, air compressors, hydraulic equipment and power plant supplies.

J. B. Stam, sales manager of the Portland, Ore., branch of the Clyde Equipment Co., has been made general sales manager of the company's Seattle office.

Tom Hanning, president; George Dierking, vice-president; R. T. Wetteland, secretary, and George Raitt, treasurer of the Steel Tank & Pipe Co. of Oregon, Portland, have been elected directors of the company. Plowden Stott, L. M. Pickett and George Priestley have been elected to the board, also.

Prof. Henry le Chatelier, noted French chemist, on Feb. 28 was presented with a medal and certificate of honorary membership in the American Society of Mechanical Engineers. The presentation was made by Charles M. Schwab, past-president of the society, at a luncheon at the American Embassy in Paris. The honor was in recognition of Professor le Chatelier for his introduction of new methods of physico-chemical analysis now widely used in metal-working establishments.

H. N. Kelsey has been placed in charge of a new branch office of the United States Electrical Tool Co., Cincinnati, at 205 University Building, Syracuse, N. Y. His territory will include all of New York State with the exception of region adjacent to New York City, which remains in charge of W. B. Da Silva. Mr. Kelsey was recently connected for five years with the Syracuse Twist Drill Co., Syracuse, and previously was identified with the Waltham Grinding Wheel Co., Waltham, Mass., and with the Ross Mfg. Co., Cleveland.

Charles A. Boulton has been appointed manager of the supply division in the sales department of the Pangborn Corporation, Hagerstown, Md., manufacturer of sand blast and dust collecting equipment. He was formerly with the Carborundum Co., Niagara Falls, N. Y., and later with the E. A. Kinsey Co., Cincinnati. In his new capacity he will have charge of abrasive and supplies service for sand blast users. Grant Davis, formerly advertising manager of the Marion Steam Shovel Co., Marion, Ohio, has joined the Pangborn organization as manager of its advertising division.

C. J. Walters, who has been with the Lamson & Sessions Co., Cleveland, for 21 years, the past eight years as assistant sales manager, has resigned to become associated with his brother, Cornelius G. Walters, in the Master Products Co., Cleveland, manufacturer of steel stampings, wrought washers and riveting burrs.

William M. Henry has been elected president and E. D. Clapp vice-president of the Crouse-Pope Foundry Corporation, Auburn, N. Y. Mr. Henry, who succeeds his father, the late William J. Henry, in the Crouse-Pope organization, is also president of the Henry Forge & Tool Co., Auburn. Mr. Clapp, who takes the place of the late William Crouse, founder of the corporation, is also treasurer of the E. D. Clapp Mfg. Co., Auburn.

E. W. Fulton has been made general manager of the Oswego Tool Co., Oswego, N. Y., succeeding the late William J. Henry, who was president and general manager. Mr. Fulton went to the Oswego company in August, 1924, as works manager and last June became sales manager.

J. R. Stebbins has been elected president of the Rebo Co., Watertown, N. Y., recently organized to succeed the Adams Equipment Co., manufacturer of extensions for hand trucks. O. L. Stevens will be vice-president of the new company and D. N. Gilbert secretary and treasurer.

Howard Bruce, for 18 years president of the Bartlett Hayward Co., Baltimore, has been elected chairman of the board, and has been succeeded by Howell Fisher, who has been first vice-president and general manager for 12 years. Albert C. Bruce has been made a vice-president. The remainder of the executive personnel remains unchanged.

George C. McClure, formerly purchasing agent of the American Rolling Mill Co., Middletown, Ohio, and more recently Chattanooga, Tenn., representative of the Ashland Fire Brick Co., Ashland, Ky., has been transferred to the main office of the Ashland company and will have charge of sales in the Ohio territory.

John R. Davis, for many years vice-president and a director of the Moore Push-Pin Co., Philadelphia, has been elected president, succeeding the late William Percy Mills.

Dr. Harvey Nathaniel Davis, professor of mechanical engineering at Harvard University, has been elected president of the Stevens Institute of Technology, Hoboken, N. J., succeeding the late Dr. Alexander C. Humphreys, and will assume his new duties on Sept. 1. Dr. Davis has occupied the chair of mechanical engineering at Harvard since 1919 and previously served as instructor and assistant professor of physics at that institution. He was born at Providence in 1881, the son of the late Nathaniel French Davis, for many years head of the department of mathematics at Brown University. The younger Doctor Davis was graduated from Brown, receiving the degrees of A. B. and A. M. He later attended Harvard, his work there leading to the degrees of A. M. and Ph. D. His professional activities include service as an engineer in the turbine department of the General Electric Co., as an aeronautical mechanical engineer in the United States Air Service and as a consulting engineer in the Bureau of Mines and for the Franklin Railway Supply Co. and the Air Reduction Co. He is a fellow of the American Academy of Arts and Sciences, a member of the Washington Academy of Sciences, the American Society of Mechanical Engineers, the American Physical Society and of the American Mathematical Society. He is also a member of the honorary fraternities, Phi Beta Kappa and Sigma XI. He is the author, with Prof. L. S. Marks, of "Steam Tables and Diagrams," and of various papers on thermodynamic subjects.



DR. H. N. DAVIS

Edward F. Hartnett, associated with the sales department of the United States Radiator Corporation, has been appointed sales manager of the Green Island, N. Y., plant.

R. S. Archer, research metallurgist Aluminum Co. of America, Cleveland, discussed "Aluminum" before the Hartford, Conn., and the Worcester, Mass., chapters of the American Society for Steel Treating on March 13 and 14 respectively.

Thomas A. Arthur has resigned as vice-president and a director of Hickman, Williams & Co., Pittsburgh, but expects to continue in the iron and steel brokerage business with which he has been identified for 30 years. He joined Hickman, Williams & Co. in 1907 and about 10 years ago was elected vice-president. Before making that connection he had been with Naylor & Co. and

with Banning Cooper & Co., which in 1899 took over the Pittsburgh office of the Naylor organization.

T. E. McLaughlin has been appointed superintendent of the Youngstown plant of the Truscon Steel Co., succeeding Albert Senf, who has been made manager of the company's new property at Los Angeles.

Boyd B. Jack, who was vice-president and general manager of the Empire Steel Co., Cleveland, taken over by the new Empire Steel Corporation, Mansfield, Ohio, has resigned.

G. A. Hughes, chief electrical engineer Truscon Steel Co., Youngstown, will address the Pittsburgh section of the American Welding Society at the monthly meeting, Wednesday evening, March 28, in the quarters of the Engineers Society of Western Pennsylvania, William Penn Hotel. His subject will be "Spot Welding."

Fred E. Wilhelm has resigned from the Judson Mfg. Co., San Francisco, and has joined the sales organization of the Pacific Coast Steel Co., with headquarters in the Hunter-Dulin Building in that city. He had been with the sales department of the Judson company since 1919.

New Sheet and Strip Association to Be Incorporated in Ohio

PITTSBURGH, March 12.—A joint meeting of the members of the National Association of Sheet and Tin Plate Manufacturers, the Hot-Rolled Strip Steel Institute and the Cold-Rolled Strip Steel Institute held here last Wednesday considered and approved with minor alterations the plan for merging these organizations into one association to be known as the National Association of Flat Rolled Steel Manufacturers.

The new organization is to be chartered under the laws of Ohio, which are more favorable in respect to trade association incorporations than those of other States. This means that the new body must legally have an office in that State and strengthens the idea that the headquarters will be located in Cleveland. The sheet and cold-rolled strip associations now are located in Pittsburgh and headquarters of the Hot-Rolled Strip Steel Institute are in Canton, Ohio.

Before the new association becomes operative, it will be necessary to secure the signed acceptance of the plan by companies representing enough of the country's sheet, strip and wide strip productive capacity to assure its success, and the getting of acceptances now is in progress.

Foreign Commerce Handbook

Under date of February, 1928, the foreign commerce department of the Chamber of Commerce of the United States has issued its biennial edition of a handbook giving sources of information regarding exports, imports and foreign trade generally. References are listed under alphabetically arranged topical headings. One such, selected at random to indicate the method of treatment, follows:

Combination in Export.—Information regarding combinations in export trade formed under Export Trade Act (Webb-Pomerene Law) may be obtained from Federal Trade Commission, Washington. Names of all combinations formed under act are on record there. Consult also Bureau of Foreign and Domestic Commerce, Washington.

About 90 topics are treated in similar manner in the 42 pages of text.

The Illinois Commerce Commission has ordered a reduction in rates for the transportation of coal from Illinois mines to Chicago. The order states that rates maintained by railroads for transportation of coal from Pennsylvania, Maryland, Virginia, Kentucky, West Virginia and Tennessee are lower than corresponding rates in Illinois.

NEW TRADE PUBLICATIONS

Punches, Shears and Bending Rolls.—Hendley & Whittemore Co., Beloit, Wis. Catalog No. 12. Sixty pages, illustrating and describing both power and hand-operated punches and shears, slip roll hand-forming machines and various types of bending rolls.

Air Filters.—Staynew Filter Corporation, Rochester, N. Y. Bulletin 30D3, of 24 pages, illustrates and describes an industrial air filter designed to protect machinery, buildings and employees from abrasive dust. The device is attached to air inlets of various types of internal combustion engines and is made in various sizes.

Drum Controllers.—General Electric Co., Schenectady, N. Y. Bulletin GEAS87, of four pages, illustrates and describes controllers for motors used on crane hoists and similar applications.

Parts Molded of Thermoplas.—Cutler-Hammer Mfg. Co., Milwaukee. Pamphlet of 24 pages devoted to the use of an insulating material having both electrical and mechanical strength and low cost for material and assembly. The material is synthetic and will stand temperatures up to 400 deg. Fahr., or more. It is used for electric plugs and many parts where momentary temperatures may run high.

Electric Crane Operation and Maintenance.—Whiting Corporation, Harvey, Ill. Bulletin 179 of 32 pages, thoroughly illustrated, gives a good deal of information and some advice in connection with assembly, operation and maintenance of electric overhead traveling cranes. Included is a pictorial representation of the standard signals to crane men, as adopted by the Bethlehem Steel Co.

Helicoid and Sectional Flight Screw Conveyors.—H. W. Caldwell & Son Co. (Link Belt Co.), Western Avenue and Seventeenth Street, Chicago. List price book No. 989 of 88 pages, illustrated, is devoted to the helicoid type of screw conveyor and the gearing and parts necessary for its operation. Spare parts are listed in many tables, with dimensions and prices, covering the entire range of this type of equipment.

"Switch-Start" Motors.—Lincoln Electric Co., Cleveland. Four-page folder describing the starting and operating characteristics of a motor started by throwing the switch right across the line. This is one of a line of motors in which arc welding has had a large place.

Tiering and Piling Equipment.—Economy Engineering Co., 2639 West Van Buren Street, Chicago. Folder illustrating several types of lifting, tiering, stacking and piling equipment for use in manufacturing plants and warehouses and operated both by hand and electric power. Four units are shown, varying in capacity from 500 to 8000 lb., and in range from 10 to 30 ft.

Speed Reducers.—Palmer-Bee Co., Detroit. Catalog No. 48, 48 pages, devoted to speed reducers of both herringbone and spur gear types. The herringbone units employ the Sykes herringbone gear with continuous teeth and sharp apices, and are available in ratings from fractional to 200 hp., and in ratios from 2 to 1 up to 4000 to 1. Salient features, including the method of lubrication, are described and illustrated. Tables intended to facilitate selection of units for various classes of service are included, as well as tables of dimensions and weights. Other sections are devoted to spur gear reduction units and to the company's flexible couplings.

Sand-Mixing Equipment.—Standard Sand & Machine Co., 5151 St. Clair Avenue, Cleveland. Binder of 30 pages describes briefly some of the important features of design and construction of a line of sand-mixing machinery. Dimensions and capacity are given, with full-page illustrations of various types of the machine and sectional views.

Automatic Stokers.—American Engineering Co., Philadelphia. Pamphlet of 12 pages devoted to the use of the Taylor stoker for steam boilers. The pamphlet is well illustrated and shows the operation of the stoker in forcing coal into the fire zone and ashes out at the bottom of the grate.

Machinery and Equipment.—Walter A. Zelnicker Supply Co., St. Louis. Bulletin 355, listing various cranes, engines, motors, generators, air compressors, derricks, tanks, rails, shovels, locomotives, cars and other equipment in company's present stock.

Gas Burners.—Lee B. Mettler Co., 406 South Main Street, Los Angeles. Folder devoted to Mettler gas burners for various industrial installations.

Coking Equipment.—Semet-Solvay Engineering Cor-

poration, 40 Rector Street, New York. Pamphlet 337, an index of literature on Semet-Solvay and Steere coke oven, by-product, water gas and gas plant equipment and processes.

Alloy Steel Castings.—Nugent Steel Castings Co., Wood and Thirty-first Street, Chicago. Booklet telling of the application of Nugent alloy steel to various types of machinery.

Magnetic Separator Pulleys.—Cutler-Hammer Mfg. Co., Milwaukee. Bulletin P-26, explaining in detail construction and design of all types of magnetic separator pulleys made by company. Several tables giving cu. ft. per hr. capacity of various sizes and correct width and thickness of belts to be used are included.

Vertical Chamber Gas Oven.—Carl Still Corporation, 114 Liberty Street, New York. Pamphlet of 14 pages devoted to the Indugas vertical chamber oven, operated on the recuperative or the regenerative principle and heated with its own or auxiliary gas. This is based on a German invention redesigned and adapted to American practice in gas works and coke oven construction.

Starter for Electric Motors.—Allen-Bradley Co., Milwaukee. Folder describing an automatic compression resistance starter, type J-3052, designed for smooth starting and gradual acceleration.

Refractory Materials.—General Refractories Co., 106 South Sixteenth Street, Philadelphia. Brief folder devoted to Arcofrax high-alumina brick for use in the hot zones of kilns.

Car Dumpers.—Roberts & Schaefer Co., Wrigley Building, Chicago. Bulletin 103, describing varied installations of company's rotary car dumpers for use in mines and industrial plants.

Steel Tanks.—Sistersville Tank & Boiler Works, Sistersville, W. Va. Catalog listing various types of tanks for filling station, bulk station, pressure, oil field, fuel oil and other liquid storage purposes. Tanks are built in welded, standard, riveted-welded and other types in capacities from 220 to 26,000 gal.

Rebuilt Machinery.—J. L. Lucas & Son, Inc., Bridgeport, Conn. List 73, containing wide range of used and rebuilt machine tools and machinery carried in stock by company.

Steel Shelving.—Universal Fixture Corporation, 133 West Twenty-third Street, New York. Leaflet dealing briefly with various types of unit and other steel shelving.

Electrical Fixtures.—Crouse-Hinds Co., Syracuse, N. Y. Bulletin 2107, devoted to pipe hangers, flexible fixture hangers and self-threading unions and connections.

Portable Conveyors.—George Halss Mfg. Co., 141st Street and Park Avenue, New York. Catalog 1127 of 24 pages illustrates and describes a line of portable conveyors driven by electric motors or gasoline engines and with different types of operating surfaces. These are shown in use in a wide variety of industrial activities.

Unemployment Not Machine-Made

(Concluded from page 734)

alluded to, that the large accumulated savings of the workers in our country and the greater ability of the workers to temporarily contract their standard of living, which had so greatly increased in the last decade, have allowed many of the unemployed to tide over for a short period.

It was the statesmanship of America's industrial management that was alert enough to make use of the power-driven machinery which led our country into a period of prosperity during the very years which proved so difficult for other industrial countries after the war. The machine releases men from routine hand labor so that more of them may devote themselves to tasks of higher order. It is now the task of industrial management so to increase the stability of production that employment fluctuations may be reduced to a minimum. Public authorities and private management should alike be watchful that no undue employment situation develops and should be ready to counteract by proper means the hardships of material unemployment that may exist in any particular locality. True signs, however, are lacking that there is a marked increase of forced idleness in the United States involving growing poverty.

European Mills in Firm Position

Prices Strong and Deliveries Becoming Extended—British
Pig Iron Market Quiet But Steel Demand Improves

(By Cable)

LONDON, ENGLAND, March 12.

DEMAND for Cleveland pig iron has declined, but makers expect spring requirements to appear shortly. Imports of foreign iron into Tees are diminishing. Export demand has improved, but actual sales are small.

Hematite is still quiet although the East Coast output has been reduced to 10 blast furnaces. Producers, however, are hoping to reduce their stocks. Foreign ore is inactive, but prices are advancing as a result of the continued strike at the Swedish mines.

Finished steel demand is improving, with increased domestic shipbuilding orders, but export demand is generally poor and plate mills are in need of tonnage.

February exports of pig iron totaled 27,816 tons of which the United States received none. Total exports of iron and steel were 317,036 tons.

Tin plate is moderately active. The Asiatic Petroleum Co. has placed a large order with Welsh mills at a price that was not disclosed, but is believed to

have been a minimum of 17s. 9d. (\$4.33) per base box, f.o.b. works port. Tin plate makers are meeting Tuesday and it is believed they will increase the scheduled price to 18s. (\$4.39) per base box, as there are few sellers below that figure. Users have been attracted by low prices and a fair general demand is developing. Galvanized sheets are quiet and easier. Black sheets are idle.

Continental demand for iron and steel is generally quiet, as consumers are not inclined to pay the present high prices. British users of semi-finished material are purchasing only small lots for prompt delivery. Most Continental mills are reported to be well booked with business and many have withdrawn quotations. The International Wire Rod Cartel has advanced its price to £5 15s. (\$28.01) per ton, f.o.b.

In France there were 144 furnaces in blast on Jan. 31. Production of pig iron in January totaled 809,000 metric tons and of steel ingots and castings, 750,000 tons. The pig iron output of the Saar in January was 156,000 metric tons and the steel production 170,000 tons. There were 25 furnaces in blast in the Saar Jan. 31.

FRENCH PRICES STRONG

Pig Iron and Steel Products Advancing—Mills
Quoting Longer Deliveries

PARIS, FRANCE, Feb. 24.—Although the domestic iron and steel market still shows decided strength and some prices are advancing, sellers for export have encountered difficulty in obtaining the high prices asked on certain products. Prices for export are firm, however, and there has been an increase of business from South America and Japan. In the domestic market there is still a scarcity of certain products, but with the new comptoir for semi-finished material and beams effective a steadier market is expected. A further increase in freight rates of about 11 per cent is expected.

Pig Iron.—As a result of increased demand from domestic foundries, producers have increased the total iron available for March by 5000 tons, having made 38,000 tons of phosphoric foundry iron. The price established for March is 445 fr. (\$17.49) per ton. Producers of hematite have made 35,000 tons available for March consumption and 15,000 tons for April. Domestic demand is good, with many buyers laying in stocks in anticipation of higher prices. In view of the prospective increase in freight rates, foundries have decided to add 5 fr. (20c.) per ton to quotations on all products which are sold at delivered prices. At a recent meeting of the entente of French, Belgian and Luxembourg producers of phosphoric pig iron the following export prices were established: For Great Britain and overseas countries, £3 5s. 6 d. (\$15.95) per ton; for Holland, £3 7s. (\$16.32) per metric ton, delivered Dutch

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.87 per £ as follows:

| | | | | | |
|--|----------|-------------|--|------------|-----------|
| Durham coke, del'd. | £0 18s. | | | \$4.39 | |
| Bilbao Rubio ore*... | 1 1 3/4 | to £1 2s. | | 5.30 | to \$5.36 |
| Cleveland No. 1 fdy. | 3 7 1/2 | | | 16.44 | |
| Cleveland No. 3 fdy. | 3 5 | | | 15.83 | |
| Cleveland No. 4 fdy. | 3 4 | | | 15.59 | |
| Cleveland No. 4 forge | 3 3 1/2 | | | 15.46 | |
| Cleveland basic (nom.) | 3 15 | to 3 15 1/2 | | 18.27 | to 18.39 |
| East Coast mixed... | 3 9 | to 3 10 | | 16.80 | to 17.05 |
| East Coast hematite | 3 9 1/2 | to 3 10 1/2 | | 16.93 | to 17.17 |
| Rails, 60 lb. and up. | 7 15 | to 8 0 | | 37.75 | to 38.96 |
| Billets | 6 0 | to 6 10 | | 29.22 | to 31.66 |
| Ferromanganese | 13 10 | | | 65.75 | |
| Ferromanganese (export) | 13 0 | to 13 5 | | 63.31 | to 64.53 |
| Sheet and tin plate bars, Welsh | 5 7 1/2 | to 5 15 | | 26.18 | to 28.01 |
| Tin plate, base box. | 0 17 3/4 | to 0 18 1/4 | | 4.33 | to 4.45 |
| Black sheets, Japanese specifications | 13 5 | to 13 10 | | 64.53 | to 65.75 |
| | | | | C. per Lb. | |
| Ship plates | 7 12 1/2 | to 8 2 1/2 | | 1.66 | to 1.77 |
| Boiler plates | 9 2 1/2 | to 9 12 1/2 | | 1.98 | to 2.09 |
| Tees | 8 2 1/2 | to 8 12 1/2 | | 1.77 | to 1.99 |
| Channels | 7 7 1/2 | to 7 17 1/2 | | 1.60 | to 1.71 |
| Beams | 7 2 1/2 | to 7 12 1/2 | | 1.55 | to 1.66 |
| Round bars, 3/4 to 3 in. | 7 5 | to 7 15 | | 1.58 | to 1.69 |
| Steel hoops | 10 10 | to 11 0 | | 2.28 | to 2.39 |
| Black sheets, 24 gage | 10 0 | to 10 5 | | 2.17 | to 2.23 |
| Galv. sheets, 24 gage | 13 5 | to 13 10 | | 2.88 | to 2.94 |
| Cold rolled steel strip, 20 gage, nom. | 14 0 | to 14 5 | | 3.04 | to 3.10 |

*Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports (Per Metric Ton)

| | | | | | |
|------------------------|----------|-----------|---------|------------|------------|
| Foundry pig iron (a) | | | | | |
| Belgium | £3 4s. | to £3 5s. | \$15.58 | to \$15.83 | |
| France | 3 4 | to 3 5 | 15.58 | to 15.83 | |
| Luxemburg | 3 4 | to 3 5 | 15.58 | to 15.83 | |
| Basic pig iron (nom.): | | | | | |
| Belgium | 3 0 | to 3 1 | 14.61 | to 14.85 | |
| France | 3 0 | to 3 1 | 14.61 | to 14.85 | |
| Luxemburg | 3 0 | to 3 1 | 14.61 | to 14.85 | |
| Coke | 0 18 | | 4.39 | | |
| Billets: | | | | | |
| Belgium | 4 13 1/2 | | 22.77 | | |
| France | 4 13 1/2 | | 22.77 | | |
| Merchant bars: | | | | | C. per Lb. |
| Belgium | 5 7 | | 1.18 | | |
| France | 5 7 | | 1.18 | | |
| Luxemburg | 5 7 | | 1.18 | | |
| Joists (beams): | | | | | |
| Belgium | 4 17 | | 1.07 | | |
| France | 4 17 | | 1.07 | | |
| Luxemburg | 4 17 | | 1.07 | | |
| Angles: | | | | | |
| Belgium | 5 5 | | 1.16 | | |
| 1/2-in. plate: | | | | | |
| Belgium (a) | 6 10 | | 1.44 | | |
| Germany (a) | 6 10 | | 1.44 | | |
| 3/4-in. ship plates: | | | | | |
| Belgium | 6 6 | | 1.39 | | |
| Luxemburg | 6 6 | | 1.39 | | |
| Sheets, heavy: | | | | | |
| Belgium | 6 1 | | 1.34 | | |
| Germany | 6 1 | | 1.34 | | |

(a) Nominal.

frontier; for Italy, £2 19s. 6d. (\$14.50), Thionville; for Switzerland, 79.25 Swiss francs (\$15.25) per ton, delivered Basle, ex-duty. Reductions from these prices are granted for large tonnages. Basic pig iron for export is quoted at £2 18s. to £2 19s. (\$14.13 to \$14.42) per metric ton, f.o.b. Antwerp.

Semi-Finished Material.—Mills are well booked with business and in some cases cannot offer deliveries inside of three months. Export quotations range from £4 3s. 6d. to £4 7s. (\$20.33 to \$21.19) per ton on blooms; £4 10s. to £4 14s. (\$21.92 to \$22.90) per ton on billets and £4 13s. to £4 16s. (\$22.65 to \$23.38) per ton on sheet bars, all f.o.b. Antwerp.

Finished Material.—The market is firm, and, although beams are the only finished product controlled by the comptoir, others are following the same upward movement. Most rolling mills are well covered and are quoting prices 30 to 40 fr. (\$1.18 to \$1.57) per ton higher than at the beginning of February. For export, beams are quoted at £4 14s. to £4 16s. per ton (1.04c. to 1.06c. per lb.). Bars range from £5 6s. to £5 7s. per ton (1.17c. to 1.18c. per lb.), with some mills not seeking further tonnage quoting £5 7s. 6d. per ton (1.18c. per lb.). The sheet market is active, but the advance in prices has been less pronounced than in other products. Longer deliveries are being offered by mills. The tube market has been rather active lately. The European Tube Syndicate is negotiating for a steel pipe line in the oil fields of Baku, requiring about 50,000 tons. British and American makers, also, are competing for this business.

Italian Steel Cartel Formed

HAMBURG, GERMANY, Feb. 26.—It is reported from Italy that Italian steel producers, who have not been united in any association, have established a cartel similar to the German Steel Syndicate. Only one small producer is not a member. It is expected that the new association, which will control sales in Italy, will reduce prices.

German Armco Iron Output Increased

HAMBURG, GERMANY, Feb. 26.—Production of "Armco" ingot iron under license from the American Rolling Mill Co., Middletown, Ohio, was begun by the United States Works, Düsseldorf, last summer. Output has been about 340 tons a month and will be considerably increased as a result of heavy demand.

Japan to Use Heavier Rails

As part of a program to replace the rails on the Imperial Japanese Government railroads with 100-lb. sections, the entire track from Yokohama to Kobe is to be relaid in 1931. In line with this program it has been announced that work over a distance of about 70 miles out of Koze will be undertaken soon, says a report received by the Department of Commerce, Washington, from J. H. Ehlers, assistant commercial attaché, Tokio.

Exports of Tractors at New Record Level

Tractors make up by far the largest item of farm equipment exported from the United States. Shipments abroad during the past few years have grown so rapidly that they are now in excess of the peak of \$30,000,000 reached in the unusually active year of 1920, according to the agricultural division, Department of Commerce. This item represents more than 40 per cent of the total agricultural implement exports. In 1927 tractors to the value of \$37,102,302 were exported, compared with \$30,485,519 in 1926; \$27,980,568 in 1925 and \$14,669,971 in 1924.

Revenue freight loaded in the week ended Feb. 25 is reported by the American Railway Association at 869,590 carloads. This is the lowest figure for several weeks and is nearly 50,000 cars below the figures for the corresponding weeks of 1927 and 1926.

BELGIAN MILLS WELL BOOKED

Mills Adopt Independent Attitude Although Price Peak May Have Been Reached

ANTWERP, BELGIUM, Feb. 25.—The market continues active, and prices are firm and in some cases advancing. The volume of business being transacted is not large, however, as many mills are well booked with tonnage and willing to accept further business only at prices which consumers are as yet unwilling to pay. In some quarters it is believed that the peak of the present advance has been reached. It is pointed out in some quarters that the highest prices have been paid by speculators, most consumers not being inclined to buy at the prices quoted by the mills. In some cases, also, stocks have been replenished so that users have their immediate requirements well covered. Exporters have begun to quote foreign buyers on the higher price basis and are booking some tonnages which had been withheld in the hope that prices would decline. Although there may be a temporary reaction in prices, it is not expected to be of long duration, as output is restricted by the International Steel Cartel and unless there is a decided decline in demand there will be no surplus to depress the market.

Pig Iron.—Stocks are small, demand is good, and prices are firm. No advances have been made by the syndicate because of competition from British furnaces. No. 3 phosphoric foundry iron is quoted at about \$16.25 per ton, f.o.b. furnace, while Middlesbrough foundry iron is offered at \$16.70 per ton, delivered Antwerp. Export prices are being maintained at about £3 3s. (\$15.34) per ton, f.o.b. Antwerp.

Semi-Finished Material.—There is a decided scarcity of semi-finished steel, so that, despite offers of high prices by buyers in need of material, little business is being booked. Current quotations are nominally £4 4s. to £4 7s. (\$20.46 to \$21.19) per ton for blooms; £4 11s. to £4 14s. (\$22.16 to \$22.90) per ton for billets and £4 16s. (\$23.38) per ton for sheet bars.

Finished Material.—Prices are nominally higher, but mills are so well booked that even at the advances few are interested in additional tonnage. Beams are firm, and prices show an upward tendency at £4 15s. per ton (1.05c. per lb.). Bars are quoted at £5 7s. per ton (1.18c. per lb.). Hoops are quoted at £6 5s. per ton (1.38c. per lb.). Corrugated reinforcing bars are £5 12s. 6d. per ton (1.24c. per lb.), f.o.b. Antwerp.

German Unemployment Payments Shifted to Industry

HAMBURG, GERMANY, Feb. 26.—Total payments to the unemployed during 1927 were 908,300,000 m. (\$217,083,700), compared with 1,179,000,000 m. (\$281,781,000) in 1926. These payments are now to be shifted to employers and employees. In 1927, by special tax, employers and employees paid to this fund a total of 682,300,000 m. (\$163,069,700), compared with 523,600,000 m. (\$125,140,400) in 1926; local municipalities paid 53,800,000 m. (\$12,858,200), compared with 148,400,000 m. (\$35,467,600) in 1926, counties paid 52,800,000 m. (\$12,619,200), compared with 243,000,000 m. (\$58,077,000) in 1926, and the Government paid 116,000,000 m. (\$27,724,000) compared with 258,000,000 m. (\$61,662,000) in 1926.

Luxemburg Increases Output

Production of pig iron and steel in Luxemburg, amounting to 2,723,359 and 2,470,172 metric tons respectively in 1927, reached the highest peaks in the history of the industry, according to a report received by the iron and steel division, Department of Commerce, Washington, from the office of the trade commissioner in Paris. In 1926 the totals were 2,511,561 tons of pig iron and 2,243,722 tons of steel. This gain, it is pointed out, is in line with the programs of the three large Luxemburg sales groups, the Columbia, the Sogeco and the Soco-Belge.

Machinery Markets and News of the Works

SALES IN FAIR VOLUME

Present Rate of Activity Expected to Continue Throughout March

International Harvester Co. Issues Inquiry and Willis Motors, Inc., Has List of Tools in Preparation

MACHINE tool sales continue in fair volume, and it is expected that bookings will be maintained at the present rate during the remainder of the month. It is reported from Cincinnati that, barring a radical change in conditions in the next two weeks, the volume of business booked by some companies during the first three months of this year will show an appreciable increase over the corresponding period of last year. In the Chicago district sales are at the rate of the latter part of February, with farm implement manufacturers the most active group.

A fair showing of machine tool sales for the first quarter of this year is also indicated by a tentative calculation of the machine tool orders index of the National Machine Tool Builders' Association. According to this index, allowing for the shorter month, orders during February were only slightly less than those of

January, which were higher than for any month since May, 1920.

The automobile industry is expected to be more active in placing orders for machine tools in the next few months. One large builder in the Cincinnati district has quoted on about \$300,000 worth of such equipment, most of which is expected to be placed during the first half of this year.

Railroad buying is comparatively light, although there are a number of pending lists. The Lehigh Valley is reported to be preparing a short list. The Transit Commission, New York, has asked for additional information regarding tools for one of the shops that will serve the new subway. In New England, inquiries have been received from railroads for radial drills and other heavy equipment.

The International Harvester Co. has issued a list for its Moline, Ill., tractor plant, and a tractor builder at Waterloo, Iowa, is in the market for a number of machine tools. The Willis Motors, Inc., Chicago, is said to be preparing a list, which will include lathes, milling machines and other standard tools.

Small lot purchases have been made by the Ford Motor Co., which placed 10 universal grinders during the week. Tool room equipment has been taken by the Studebaker Corporation, South Bend, Ind., and among other machines the Stewart-Warner Speedometer Corporation, Chicago, has ordered 15 presses.

New York

NEW YORK, March 13.

BUSINESS in machine tools is somewhat irregular, some sellers reporting continued activity and others slightly less demand. Many users are apparently inclined to delay placing orders, but there is still a fair volume of single tool purchases. The Delaware, Lackawanna & Western has closed for about half its original list of 30 items and has postponed indefinitely purchase of the remainder. The Lehigh Valley is reported to be preparing a short list of machine tools. The Transit Commission, New York, has been asking for additional information in preparing a list of tools for a shop at the 207th Street yard of the new subway. The New York Central, which has issued inquiries for 20 or more tools since the first of the year, has recently inquired for any changes that may have been made in prices submitted on inquiries made prior to Jan. 1.

Among industrial users of machine tools, the Wright Aeronautical Corporation, Paterson, N. J., has made some further purchases of used equipment the past week and expects to be in the market for more tools when its new building is started. The Fairchild Airplane Mfg. Corporation, Farmingdale, Long Island, which recently purchased a turret lathe, has also bought a boring mill. The General Electric Co. has made further purchases of tools in the week.

Other sales include a No. 1 Pratt & Whitney jig boring machine to a manufacturer in Connecticut, No. 3 die sinker to a company in Chicago, No. 4 A universal die sinker to a forge company in Illinois, two 13 x 30-in. lathes to a maker of automobile accessories in Chicago, No. 2 jig boring machine to a manufacturer in Cincinnati, four 5-in. production hand milling machines to a motor company in Detroit, No. 0 Sigourney drill to a manufacturer of office

supplies in New York, No. 4 A universal die sinker to a railroad supply company in Pennsylvania and No. 2 A Browne & Sharpe universal milling machine and No. 2 surface grinder to a company in Salt Lake City.

Plans have been arranged by Transogram Co., Inc., 148 Thirty-ninth Street, Brooklyn, manufacturer of toys, etc., for a one-story and basement plant, 100 x 400 ft., at Haskell, N. J., to cost approximately \$100,000 with equipment. Present business will be removed to new location. Oscar Goldschlag, Inc., 1482 Broadway, New York, is architect and engineer.

Max Pollak Iron Works, 504 East Seventy-sixth Street, New York, has purchased five-story building of Continental Baking Corporation at 337 East Seventy-fifth Street, and will remodel for an extension.

Board of Education, Bronxville, N. Y., plans installation of manual training equipment in two-story junior high school to cost \$750,000, for which plans are being completed by H. Leslie Walker, 144 East Fifty-fourth Street, New York, architect.

Port of New York Authority, 75 West Street, New York, is asking bids until March 26 for electrical equipment for Elizabeth-Howland Hook bridge over the Arthur Kill, between New Jersey and Staten Island. J. E. Ramsey is chief executive officer.

United States Shipping Board, Department of Maintenance and Repair, 45 Broadway, New York, will receive bids until March 28 for 66 pumping units for salt-water cooling and general service, fresh-water piston cooling, lubricating oil, etc., and for eight electric motors; on March 26 for 6 thrust bearings.

A. E. Kluepelberg, 375 East Fordham Road, New York, architect, will take bids on general contract in about 30 days for a two-story automobile service, repair and garage building to cost close to \$100,000 with equipment.

Cities Service Co., 60 Wall Street, New York, is arranging for sale of stock to total \$20,000,000, proceeds to be used for expansion in public utility properties, including

extensions and improvements in power plants and transmission lines, and acquisition of new light and power properties.

Board of Education, White Plains, N. Y., plans installation of manual training department in three-story high school to cost \$1,000,000. Starrett & Van Vleck, 393 Seventh Avenue, New York, are architects.

William Shary, 41 Union Square, New York, architect, has filed plans for a two-story automobile service, repair and garage building, 100 x 142 ft., to cost about \$90,000 with equipment.

Electric Bond & Share Co., 71 Broadway, New York, operating electric light and power properties, including Pennsylvania Power & Light Co., Utah Power Co. and Southwestern Power & Light Co., has arranged for increase in capital from \$100,000,000 to \$300,000,000, a portion of fund to be used for expansion in power and transmission lines, acquisition of additional properties, etc.

New York Central Railroad Co., C. S. White, room 344, 466 Lexington Avenue, New York, purchasing agent, is asking bids until March 19, for wire fence and fence posts, serial contract No. 5-1928.

Union Bag & Paper Corporation, Woolworth Building, New York, has awarded general contract to Star Iron & Steel Co., East Eleventh Street, Tacoma, Wash., for pulp and paper mill at Tacoma, to cost \$800,000 with machinery. A lumber mill for raw material for pulp production will be operated.

Corona Corporation, 346 Claremont Avenue, Jersey City, N. J., manufacturer of gas and electric fixtures, has asked bids on a new five-story plant to cost in excess of \$85,000 with equipment. Christian H. Ziegler, 75 Montgomery Street, is architect.

Betz Brothers, 32 James Avenue, Jersey City, N. J., manufacturers of hollow steel doors and trim, etc., have leased a portion of former mill of Passaic Cotton Mills, Passaic, N. J., and will remodel for new plant. It is understood that present works will be removed to new location later. Another portion of mill property was secured recently by Triplex Safety Glass Co., Hoboken Terminal Building, Hoboken, N. J., for manufacture of special sheet glass for automobile windshields, almost exclusively for Ford Motor Co.

Art Metal Works, 7 Mulberry Street, Newark, has taken title to adjoining property and will use for expansion.

Samuel Sanbar and Albert Caracus, Newark, have leased property at 510 North Eleventh Street and will establish a plant for manufacture of radiator enclosures.

Radio Frequency Laboratories, Inc., Richard W. Seabury, 245 Rockaway Avenue, Boonton, N. J., president, has leased 125 acres in Rockaway Valley section as site for a new laboratory and aircraft field, to be operated for experimental work in conjunction with Bureau of Standards, Department of Commerce, Washington. Hangars, repair shop and other airplane buildings will be erected.

George E. Edmunds, Detroit, formerly connected with Edmunds & Jones Corporation of that city, manufacturer of automobile headlights, etc., and Col. E. C. Carrington, chairman Hudson River Night Line, Pier 32, North River, New York, have secured a controlling interest in Eastwood Mfg. Corporation, Belleville, N. J., manufacturer of brass wire screen used for paper mill service, and other wire goods. New owners plan an expansion. C. H. Neally, heretofore principal owner, will continue as chairman of board; Mr. Edmunds will be president, Col. Carrington, vice-president, and George C. Warner, treasurer.

Commercial Steel Equipment Co., 45 Morris Street, Jersey City, has been formed to manufacture steel equipment for office, store and factory and will also produce household specialties, including radiator enclosures and kitchen cabinets. T. W. Becker is president of company, G. F. Meyer, vice-president, and V. C. Stephens, treasurer.

New York branch sales office and factory of Carbon Sales Division, National Carbon Co., Inc., Cleveland, will be moved on March 15 from 357 West Thirty-sixth Street, New York, to larger quarters at Fourteenth and Henderson Streets, Jersey City. Considerable additional manufacturing equipment has been added.

Kastwell Foundry Co., 185 Christie Street, Newark, formerly Transfer Metal Castings Co., is building extension to plant.

Ideal Plating & Polishing Co., 57 Bradford Street, Newark, has been licensed by Chromium Corporation of America to do "Crodon" chromium plating. Company also expects to build plant extension adding 50,000 sq. ft. to its present floor space.

Automatic Gear Shift Corporation, 55 West Forty-second Street, New York, has been organized to manufacture automatic gear shifts for automobiles. Manufacturing will be done by contract. Awards have not yet been made.

Hasselman & Szekely, Inc., 143 East Forty-fifth Street, New York, has been incorporated to manufacture wrought

iron and bronze work, including stair railings, iron doors, lighting fixtures, lanterns, hardware, balconies, etc. Company has factory fully equipped.

New England

Boston, March 12.

THE machine tool market is more quiet than a week ago. Few new inquiries have been received, the largest coming from the railroads and calling for radial drills and other heavy-duty equipment. Outstanding inquiries apparently are no nearer closing than a fortnight ago and sales of new tools are at a minimum. A 14-in. lathe to a Providence shop and a Peerless power hack saw to a railroad, in addition to further awards by the city of Boston for its continuation school for approximately 16 machines, are the most important reported the past week. Quite a little used equipment has been sold to small shops, including a sizable punch, two blowers to a railroad, 3-in. inclinable power press, 16-in. x 6-ft. Reed-Prentice geared head lathe, two milling machines, shaper, and an Excelsior upright drill to Boston shops, and a 16-in. x 8-ft. lathe to a Gardner, Mass., plant, in addition to less important tools. Local firms handling radial drills have been notified that a change in the rating of such tools will soon be put into effect.

Small tool sales are keeping pace with those in February, but running behind those in January. Compared with a year ago they are slightly better.

Confirming previous statements regarding business conditions in the machine tool trade, the Associated Industries of Massachusetts has just issued its January report. Its index number for the metal trades is 81.5, contrasted with 101.3 for December and 79.6 for January, last year.

Barnes Airport Co., Westfield, Mass., will erect a 60 x 80-ft. hangar and 12 x 30-ft. machine shop. Plans are by Austin Co., New York.

Plans will be out this week for a two-story, 68 x 93-ft. automobile body manufacturing plant for the Waterhouse Co., Tracy Court, Webster, Mass. L. J. Chafee, Oxford, Mass., is architect.

Peter McLaughlin, 78 North Street, Pittsfield, Mass., has plans for a two-story, 60 x 65-ft. addition to be erected by Pittsfield Electric Co., 92 Renne Avenue.

Bids are about to close on a four-story and basement, 60 x 100-ft. plant to be built by Seth Thomas Clock Co., Thomaston, Conn. Lockwood, Greene & Co., Inc., 24 Federal Street, Boston, are engineers.

Ralph M. Siger, 12 Elm Street, Westfield, Mass., is preparing plans for a local two-story and basement, 72 x 118-ft., boys' trade school. C. Derby is principal.

New York offices of the Union Drawn Steel Co., Hartford, Conn., will be discontinued. New local offices are at 647 Main Street.

Crane Co. has purchased 50,000 ft. with 555 ft. frontage on Vassar Street, Cambridge, Mass., and Boston & Albany Railroad. New owner expects to improve and occupy property.

Hub Wire Cloth & Wire Work Co., 16 Chanal Street, Boston, has leased a portion of building at 28 Lancaster Street for expansion.

Smith, Seymour & Sons, Inc., Oakville, Conn., manufacturer of hardware, has plans for a two-story and basement addition, 50 x 150 ft., to cost about \$80,000.

New England Metal Culvert Co., Tenneyville Street, Palmer, Mass., is having plans drawn by Monks & Johnson, 99 Chauncy Street, Boston, architects and engineers, for a new one-story plant, 80 x 90 ft., on site recently secured at South Boston.

Board of Public Works, Springfield, Mass., is considering construction of a new pumping plant, to cost more than \$25,000 with equipment. McClintock & Craig, Springfield, are engineers.

Western Electric Co., 80 John Street, New Haven, Conn., is considering erection of a two-story factory branch at West Haven, Conn., to cost more than \$50,000 with equipment. Headquarters are at 195 Broadway, New York.

Cinder Concrete Unit Corporation, 79 Milk Street, Boston, has awarded general contract to W. M. Bailey Co., 88 Broad Street, for a one-story plant, 85 x 100 ft., at Somerville, Mass., to cost approximately \$40,000 with equipment.

General Electric Co., Pittsfield, Mass., has plans for a two-story addition in the Silver Lake section, 40 x 280 ft., to cost in excess of \$80,000 with equipment. It will be used largely for mixing and molding.

Officials of Stone & Webster, Inc., 49 Federal Street, Boston, operating electric light and power properties, have formed Eastern Utilities Associates, Inc., with capital of 2,000,000 shares of stock, no par value, to take over and consolidate Blackstone Valley Gas & Electric Co., Pawtucket and Woonsocket, R. I.; Edison Electric Illuminating Co., Brockton, Mass.; and Electric Light & Power Co., Abington and Rockland, Mass. Company plans expansion and improvements, including transmission line construction.

Brockton Ice & Coal Co., Main Street, Brockton, Mass., will build a one-story ice-manufacturing plant, 80 x 150 ft., to cost more than \$50,000 with equipment. Funk & Wilcox, 26 Pemberton Square, are architects.

Gulf States

BIRMINGHAM, March 12.

PLANs are being considered by Magnolia Petroleum Co., Dallas, Tex., for extensions and improvements in its oil refinery at Beaumont, Tex., with installations of additional units for lubricating oil production, to cost \$200,000 with machinery.

West Texas Utilities Co., Abilene, Tex., is disposing of a block of 25,000 shares of stock, a considerable portion of proceeds to be used for extensions and improvements, including transmission line construction.

Southern Pacific Lines in Texas, Houston, R. W. Barnes, chief engineer, will make extensions and improvements in power plant at car shops at Jacksonville, Tex., with installation of additional equipment. Work will be carried out in connection with an expansion program at that point to cost \$100,000.

Dothan Casket Co., Dothan, Ala., will rebuild portion of plant destroyed by fire March 1, with loss close to \$40,000 including equipment.

Gulf Coast Shell & Cement Co., Kress Building, Houston, Tex., is reported planning a new cement mill on 75-acre tract at Palacios, Tex., to cost in excess of \$100,000 with equipment. Company has arranged for an increase in capital to \$150,000.

John W. Hooser, Dallas, and W. H. Eddleman, Wichita Falls, Tex., receivers for American Refineries Co., with plant at last-noted place, have been authorized to dispose of property of company on May 3. Refinery, pipe lines, etc., are said to be valued at \$6,000,000.

San Antonio Public Service Co., San Antonio, Tex., has work under way on its power development at New Braunfels, Tex., including installation of 30,000-kw. turbo-generator and auxiliary equipment. Extensions will be made in transmission lines. Entire project will cost in excess of \$350,000.

Western Mfg. Co., San Angelo, Tex., recently formed with capital of \$100,000 to take over and expand Western Iron Works, Avenue D, has plans for four one-story additions, including machine shop, 40 x 275 ft.; foundry, 30 x 100 ft.; forge and blacksmith shop, 40 x 40 ft.; and warehouse, 40 x 40 ft. Work will begin at once. B. W. and M. S. Willig are heads.

Pasotex Petroleum Co., subsidiary of Standard Oil Co. of California, 225 Bush Street, San Francisco, will soon begin superstructure for initial units of its refinery near El Paso, Tex., to cost about \$800,000 with machinery.

Tridex Corporation, Dallas, Tex., recently organized by W. P. Gage, Dallas, and associates, has closed negotiations with Guiberson Corporation, operating a local iron and steel works, for manufacture of a new automatic cleaning machine for garage service, and quantity production will be arranged. Later, Tridex company proposes to establish its own factory. Mr. Gage is president; S. A. Wier, vice-president, and H. E. Hobson, secretary.

F. A. Mason, 2058 College Avenue, Ocala, Fla., is at the head of a project to construct and operate an ice-manufacturing and cold storage plant at Ocala, Fla., to cost about \$70,000.

Packard Motor Car Co., San Angelo, Tex., has plans for a two-story service, repair and garage building, 75 x 190 ft., to cost about \$85,000 with equipment. Beverly W. Spillman & Son., Alamo National Bank Building, San Antonio, Tex., are architects.

Markle Steel Co., Shepherd Street, Houston, Tex., is said to have plans under way for two one-story additions to be used largely for storage and distributing service, to cost close to \$70,000.

Board of Education, San Angelo, Tex., is planning construction of a new vocational school to cost close to \$100,000,

and will soon take bids on general contract. Phelps & Dewees, Gunter Building, San Antonio, Tex., are architects.

Humble Oil & Refining Co., Houston, Tex., is reported planning a new storage and distributing plant in Winkler County, comprising 40 tanks, each with capacity of 55,000 bbl., pumping and power equipment, and auxiliary apparatus. Site has been selected.

Southern Mfg. Co., Houston, Tex., has leased plant of Harlingen Planing Mills, Harlingen, Tex., and will remodel for manufacture of school furniture and supplies, to cost more than \$35,000 with machinery.

City Council, Brownsville, Tex., has arranged for bond issue of \$100,000 for a municipal airport, using tract about three miles from city. Plans will soon be arranged for hangars, machine and repair shops, oil storage and distributing building, and other structures.

Walter J. Lloyd, 702 N. E. First Avenue, Miami, Fla., is at head of a project to establish and operate a local plant for manufacture of extracts, using palmetto roofs as raw material, reported to cost about \$35,000 with equipment.

Birmingham Engine & Machinery Corporation, Birmingham, is in market for motor generator set of 100 to 150-kw. capacity. Direct current side must be 250 volts and alternating current motor side, three-phase, 60-cycle, 220 volts. Only modern unit with switchboard will be considered.

Philadelphia

PHILADELPHIA, March 12.

CONTRACT has been let by Brown Instrument Co., Roberts and Wayne Streets, to Robert E. Lamb Co., local, for a two-story addition to cost close to \$40,000 with equipment. Ballinger Co., Twelfth and Chestnut Streets, is architect and engineer.

Locust Construction Co., Sixth and Locust Streets, Philadelphia, has plans for a three-story automobile service, repair and garage building to cost \$150,000 with equipment.

Nice Ball Bearing Co., Thirtieth Street and Nicetown Avenue, Philadelphia, has awarded general contract to J. S. Rogers Co., Drexel Building, for a one-story and basement addition, 65 x 190 ft., with two extensions, each 40 x 65 ft., and for one-story garage and repair shop, 36 x 60 ft., to cost more than \$50,000 with equipment.

Valvoline Oil Co., 4001 North Fifth Street, Philadelphia, has awarded general contract to William C. Wright & Son, 22 Harvey Street, for a one-story machine shop.

Silverman & Levy, 313 South Smedley Street, Philadelphia, architects, have awarded general contract to F. W. Mark Construction Co., Commercial Trust Building, for a three and four-story automobile service, repair and garage building, 93 x 110 ft., with extension, 17 x 55 ft., to cost \$150,000.

Quaker City Cold Storage Co., Delaware and Spruce Streets, Philadelphia, has awarded contract to J. A. Hauser, Water and Spruce Streets, for an eleven-story and basement ice and cold storage plant, 110 x 130 ft., to cost close to \$1,000,000 with machinery. Ballinger Co. is architect and engineer.

Philadelphia & Reading Railroad Co., Reading Terminal, Philadelphia, has plans for a one-story addition to locomotive and car shops at Reading, Pa., to be equipped primarily as a welding works, to cost close to \$35,000.

Penn-Jersey Transportation Co., Camden, N. J., operating a motor bus line, has begun erection of a one-story service, repair and terminal building with foundations for additional stories. Complete machine and repair shop will be installed. Entire project will cost \$100,000. Company is reported planning erection of other such structures in different parts of this district.

Board of Education, Trenton, N. J., has plans for a new two-story high school on 36-acre tract, to cost about \$2,000,000, and will install manual training department. Ernest Sibley, Bluff Road, Palisade, N. J., is architect.

General Aircraft Corporation, Hazleton, Pa., recently organized, has acquired local plant of Hazleton Mfg. Co., heretofore used for manufacture of caskets, etc., for establishment of a plant. B. S. Stewart is chief engineer.

Board of Education, Lock Haven, Pa., plans installation of manual training equipment in three-story high school to cost \$275,000, for which bids are being asked on general contract. Lawrie, Green & Co., Third and Forster Streets, Harrisburg, Pa., are architects.

Fire, March 6, destroyed a portion of ice plant and power house at the plant of Dairymen's League, Wyalusing, near Towanda, Pa., with loss reported at \$22,000 including equipment. It is planned to rebuild.

Pennsylvania Gas & Electric Co., York, Pa., has arranged for a bond issue of \$700,000, a portion of proceeds

to be used for expansion, including transmission line construction.

Pennsylvania Railroad Co., C. E. Walsh, purchasing agent, room 415, 15 North Thirty-second Street, Philadelphia, is asking bids until March 22 for piston heads, contract No. 20,1928.

Haddock Mining Co., Silver Brook, Pa., will make extensions and improvements in its machine repair shops, including installation of additional equipment for repairs to engines, cars and other heavy machinery, including coal-mining equipment.

American Ice Co., City Centre Building, Philadelphia, is arranging an expansion and improvement program, including construction of a new ice-manufacturing plant at Brighton, Boston, with initial capacity of 180 tons per day, and a second plant in Boston district with output of about 120 tons daily. Another plant of like capacity will be built in New England district.

Muller & Postle, Inc., 2615 York Street, Philadelphia, has been organized to fabricate structural steel and ornamental iron, specializing in stair work and kindred lines. Company is opening new plant and desires catalogs of firms in its field. H. E. Muller is president and A. H. Postle, vice-president.

Pittsburgh

PITTSBURGH, March 12.

MACHINE tool business is notable more for the number than the size of orders, as is usually true when demand is for replacement rather than the tooling or retooling of complete shops.

Packard Motor Car Co. of Pittsburgh, 4709 Baum Boulevard, has awarded general contract to Rust Construction Co., 311 Ross Street, for a one-story and basement service, repair and sales building, 135 x 190 ft., to cost \$130,000 with equipment.

Dravo Contracting Co., Neville Island, Pittsburgh, operating a shipyard for building steel barges, etc., has begun an extension and improvement program along Ohio River, including a new one-story machine shop, with outfitting dock to be equipped with a terminal crane and runway, to cost more than \$75,000.

Lazote, Inc., Belle, W. Va., a subsidiary of E. I. du Pont de Nemours & Co., Wilmington, Del., has plans for enlargements for production of ammonia, methanol and kindred products, to cost in excess of \$350,000 with machinery. DuPont Engineering Co., du Pont Building, Wilmington, is engineer in charge.

United States Corrugated Fibre Box Co., Wheeling, W. Va., is reported planning an addition to cost about \$120,000 with equipment. H. J. Lacy is in charge.

Monongahela-West Penn Public Service Co., Fairmont, W. Va., is said to have concluded arrangements for acquisition of light and power properties in vicinity of Salem and West Union, W. Va., and plans expansion and betterments, including construction of transmission lines.

Cleveland

CLEVELAND, March 12.

SOME machine tool dealers report a fair number of single orders, although sales and inquiries dropped off the past week. A few moderate sized lots of machines are pending in this territory, but prospective purchasers seem to be in no hurry to place orders. The market in Detroit is dull, buying by the automotive industry which recently took a little spurt, having subsided. The Ford Motor Co. continues to purchase equipment in small lots and during the week bought 10 universal grinders. The Willys-Overland Co., Toledo, purchased two multiple spindle drilling machines.

Plans are being arranged by Cleveland Electric Illuminating Co., Illuminating Building, Cleveland, for construction of a steel tower transmission line in northeastern Ohio, 59 miles long, to cost \$1,800,000. Company will make extensions and improvements in Avon power plant to cost about \$55,000. A fund of \$11,600,000 is being developed for expansion and betterments in power lines, plants, substations, etc.

Hydraulic Pressed Brick Co., Central National Bank Building, St. Louis, is completing plans for a new works at Cleveland for manufacture of hollow tile, to cost \$60,000 with equipment. K. H. Mittendorf, Interstate Building, Kansas City, Mo., is engineer.

Ludlow Window Ventilator Co., East Liverpool, Ohio, recently formed by Robert J. McElravy, East Liverpool, and James Ludlow, Carrollton, Ohio, has leased quarters in the Milliron Building, for manufacture of a patented window ventilator. Operations will begin at once.

Ohio Valley Gas Corporation, operating Zane Gas Co., Zanesville, Ohio, and other natural gas properties and pipe lines, is disposing of note issue of \$400,000, portion of proceeds to be used for extensions and improvements, including acquisition of additional properties.

Fostoria Pressed Steel Co., Fostoria, Ohio, has plans for a one-story addition for enameling service, to cost more than \$50,000. Forster & Wernert, Nicholas Building, Toledo, Ohio, are architects and engineers.

Officials of Akron Rubber Reclaiming Co., Barberton, Ohio, are organizing Midwest Rubber Reclaiming Co., capitalized at \$1,000,000, to construct and operate a mill at East St. Louis, Ill. J. B. Huber is president of parent organization, and W. A. Hart, secretary.

Safety Stair Tread Co., Spruce Street, Wooster, Ohio, manufacturer of metal stair treads, has revised plans for an addition, to cost close to \$40,000 with equipment. Bids on first plans were recently rejected. Christian, Schwarzenberg & Gaede Co., 1900 Euclid Avenue, Cleveland, is architect and engineer.

Detroit

DETROIT, March 12.

BIDS are being asked by Chrysler Motor Corporation, 12265 East Jefferson Avenue, Detroit, for a six-story addition, 25 x 75 ft., for body production, to cost \$125,000. Smith, Hinchman & Grylls, Marquette Building, are architects.

Ralston Purina Mills, Inc., Battle Creek, Mich., plans rebuilding portion of mill destroyed by fire March 4, with loss estimated at close to \$250,000 with equipment. Headquarters are at 801 South Eighth Street, St. Louis.

Lohman & Lohman, 2 Huron Street, Ypsilanti, Mich., architects, have plans under way for a two-story automobile service, repair and garage building at Ann Arbor, Mich., to cost about \$100,000 with equipment.

Koestlin Tool & Die Co., 3601 Humboldt Avenue, Detroit, has awarded general contract to Krieghoff Co., 4815 Bellevue Avenue, for an addition to cost more than \$40,000 with equipment. Janke, Venman & Krecke, 1346 Broadway, are architects.

Board of Water Commissioners, 176 East Jefferson Avenue, Detroit, is asking bids until March 21 for two pumping units for auxiliary low-lift waterworks station, one pump to have a capacity of 260-million gal. per day, and other 200-million gal. per day, complete with accessory apparatus. George H. Fenkell is general manager and chief engineer.

Chevrolet Motor Car Co., Flint, Mich., has plans for a one-story addition, 225 x 900 ft., to cost in excess of \$500,000 with equipment. Wright & Nice, South Saginaw Street, are architects. Company is also said to be planning a one-story forge shop to plant at Detroit, to cost more than \$75,000. Albert Kahn, Inc., Marquette Building, Detroit, is architect for last-noted structure.

Grand Trunk Railway Co., Detroit, is reported planning a new engine house with repair facilities at Muskegon, Mich., to cost upward of \$70,000 with equipment. J. A. Heaman is chief engineer.

New Era Spring & Specialty Co., Grand Rapids, Mich., has developed a new type of pneumatic bumper for automobiles and will devote a considerable portion of plant output to this product. It consists of an inflated rubber tube supported by steel reinforcements.

Clark Equipment Co., Buchanan, Mich., manufacturer of automobile wheels, axles, transmissions, etc., is completing three new units, totaling about 40,000 sq. ft. of space, as a part of a general expansion program. Work is in progress on a two-story building at branch plant at Battle Creek, Mich., which is given over to the manufacture of tractors.

King-Seeley Co., Second Street, Ann Arbor, Mich., manufacturer of gasoline gages, etc., is having plans drawn for a two-story addition, to cost about \$75,000 with equipment. Verner, Wilhelm & Molby, Book Building, Detroit, are architects.

Beecher, Peck & Lewis, 125 West Jefferson Avenue, Detroit, paper products, is having plans drawn for a new two-story storage and distributing plant to cost about \$60,000 including mechanical-handling equipment. Albert Kahn, Inc., Marquette Building, is architect and engineer.

The Crane Market

VERY little new inquiry for overhead cranes has appeared in the past week, but locomotive crane inquiries continue to accumulate. The New Haven Illuminating Co., New Haven, Conn., is about to close on a 50-ton electric crane. The Reading Railroad has not yet purchased two 225-ton locomotive handling cranes and a 50-ton standard overhead crane. The Amtorg Trading Corporation, 165 Broadway, New York, is reported to have closed on six 15-ton crawl-tread locomotive cranes and one 25-ton standard gage crane for Russia and has pending nine 40-ton locomotive cranes. The Delaware, Lackawanna & Western is taking bids on a 20-ton locomotive crane. The Frederick Snare Corporation, New York, which has closed on a 25-ton locomotive crane for Peru has purchased a steam shovel and is preparing an inquiry for a crawl-tread locomotive crane for the same project.

South Atlantic States

BALTIMORE, March 12.

NEGOTIATIONS have been concluded by A. V. Moore Brass Works, Inc., Portsmouth, Va., for purchase of property in East Camp district, Norfolk, Va. New owner will remodel for a brass smelting and refining plant to cost in excess of \$60,000.

Virginia Electric & Power Co., Richmond, Va., is arranging an expansion and improvement program to cost \$4,000,000, including extensions in power facilities and transmission lines. About \$1,700,000 of amount noted will be used for power substations and distributing systems.

Board of District Commissioners, District Building, Washington, is asking bids until March 23 for five road rollers.

Southern Metal Products Co., Winston-Salem, N. C., is arranging for erection of one-story plant, 40 x 79 ft., for manufacture of metal weatherstrips, etc., to cost about \$18,000.

Duke Power Co., Charlotte, N. C., will proceed with construction of steel tower transmission line to Marion, N. C., and points in McDowell County, from power plant at Lake James. Tract of 5 acres has been purchased on outskirts of Marion as site for new power substation. Entire project will cost in excess of \$100,000.

Wilson-Nash Motors Co., 1109 Cathedral Street, Baltimore, representative for Nash automobile, has awarded contract to Price Construction Co., Maryland Trust Building, for two-story service, repair and sales building, 130 x 200 ft., to cost about \$85,000 with equipment. Owens & Sisco, Continental Building, are architects.

Bureau of Supplies and Accounts, Navy Department, Washington, is asking bids until March 20 for carbon and high speed twist drills for Eastern and Western yards, schedule 8615; for flat and soldering irons, and electric glue pots for Eastern and Western yards, schedule 8625; until March 22 for socket wrench equipment for Philadelphia yard, schedule 8544, and for one turret lathe, schedule 8104; until March 27 for 6000 lb. steel forgings, cruising turbine rotor, for Mare Island and Puget Sound yards, schedule 8682.

Chattahoochee Sand & Gravel Co., Columbus, Ga., is said to be planning new works on Chattahoochee River for gravel and sand washing, screening, etc., to cost in excess of \$175,000 including machinery. A similar plant is contemplated in Floyd County.

Central Atlantic States Service Corporation, Lynchburg, Va., operating local light and power properties, with other plants and system at Staunton, Harrisonburg, Radford, Pulaski, Va., has arranged for a bond issue of \$1,000,000 and note issue in same amount, proceeds to be used in part for extensions and improvements, including transmission line construction.

F. S. Royster Guano Co., Royster Building, Norfolk, Va., manufacturer of commercial fertilizer, has acquired 60 acres of water-front property at Wilmington, N. C., for a new plant, to cost in excess of \$100,000 with equipment.

General Purchasing Officer, Panama Canal, Washington, is asking bids until March 22, for 4½-hp. electric motors, bench grinder, 5000 pipe clamps, six journal jacks, 100 steel reflectors, bolts, nuts, rivets, 3000 lb. cast iron washers, tacks, grindstone frames, and other mechanical equipment for Canal Zone, Panama, schedule 2456.

Board of Education, Charlotte, N. C., is considering installation of manual training equipment in an addition to Graham Junior High School to cost \$150,000. Charles C. Hook, Commercial Bank Building, is architect.

Among recent purchases are:

United Gas Improvement Co., Philadelphia, 20-ton locomotive crane for Vicksburg, Miss., from American Hoist & Derrick Co.

Frederick Snare Corporation, New York, 25-ton locomotive crane for Lima, Peru, from Ohio Locomotive Crane Co.

New York Edison Co., New York, 2-ton, monorail electric hoist with bucket from American Engineering Co.

Advance Bag & Paper Co., Boston, 5-ton hand power crane from Armington Engineering Co.

Union Bag & Paper Power Corporation, 233 Broadway, New York, 3-ton, grab bucket electric hoist and two 2-ton, 36-ft. 9-in. span, 3-motor overhead cranes for Tacoma, Wash., from Box Crane & Hoist Corporation.

A. J. Nackley, 1121 Rugby Boulevard, Roanoke, Va., is at head of a project to establish a local mill for production of dowel pins, brackets, cross-arms and other line equipment.

Aldrich Machine Works, Inc., Greenwood, S. C., is reported planning immediate rebuilding of portion of plant destroyed by fire recently, with loss reported in excess of \$30,000, including equipment. Company specializes in textile mill equipment.

Atlanta Textile Supply Co., Austell Building, Atlanta, Ga., manufacturer and distributor of cotton mill equipment and supplies, is completing plans for a new factory, to cost close to \$30,000 with equipment.

J. L. Dornning and W. R. Massey, 1020 Boylan Drive, Raleigh, N. C., are at head of a project to construct and operate an ice-manufacturing plant at Midway, near Burlington, N. C., to cost in excess of \$40,000 with machinery.

Arnold Stone Co., Inc., Forty-seventh Street, Jacksonville, Fla., will erect a one-story plant at Greensboro, N. C., 50 x 100 ft., for cutting, polishing, grinding, etc., to cost \$25,000 with equipment.

St. Louis

ST. LOUIS, March 12.

BIDS will soon be taken by Southwestern Bell Telephone Co., Bell Telephone Building, St. Louis, for a three-story addition to its equipment storage and distributing plant, to cost approximately \$85,000 with equipment.

Associated Motors Terminal Co., 117 South Broadway, St. Louis, has asked bids on general contract for a six-story automobile service, repair and garage building, 80 x 100 ft., to cost close to \$330,000 with equipment. Gill & Jackson, Buder Building, are architects; W. J. Knight & Co., Wainwright Building, are engineers.

Shaffer Oil & Refining Co., Cushing, Okla., operating a local refinery and pipe line, is disposing of a note issue of \$10,000,000, a portion of fund to be used for extensions in plant and system.

City Council, Marshall, Mo., has authorized plans for a municipal electric light and power plant, to cost about \$80,000 with equipment. Bonds will soon be voted. Henric-Lowry Engineering Co., Security Building, Kansas City, Mo., is engineer.

Midwest Piping & Supply Co., 1452 South Second Street, St. Louis, manufacturer of pipe, pipe fittings, etc., has plans for a two-story addition, to cost upward of \$75,000 with equipment. Klipstein & Rathman, Security Trust Building, are architects.

Southwest Pump & Machinery Co., 2720 McGee Road, Kansas City, Mo., has leased a two-story building at 2710-12 McGee Road for an addition. Considerable increase in production facilities will be arranged.

Landis Machine Co., Gano and Second Streets, St. Louis, manufacturer of leather stitching machinery, etc., is planning an expansion program, including purchase of additional property for early occupancy. A note issue of \$500,000 will be sold.

Diamond Truck Co., 1737 Locust Street, Kansas City, Mo., has leased a building to be erected on Holmes Avenue for a new service, repair and garage building. Entire project will cost in excess of \$90,000.

Empire Refineries, Inc., Tulsa, Okla., is considering erection of a new plant unit at Ponca City, Mo., for production of industrial alcohol, to cost in excess of \$300,000 with machinery.

United States Cold Storage Co., Third and Locust Streets, Kansas City, Mo., is said to be arranging for extensions in cold storage and refrigerating plant, including remodeling of ice-manufacturing plant and installation of additional equipment, to cost more than \$1,000,000.

United Motor Service Co., Twenty-seventh and Warwick Streets, Kansas City, Mo., is arranging for a lease of two-story and basement building, 100 x 120 ft., to be erected at Twenty-fifth and McGee Streets, and will occupy for a new service, repair and garage building. It will cost about \$90,000. R. H. Sanneman, Lee Building, is architect.

Buffalo

BUFFALO, March 12.

PLANS are being drawn by Thompson, Holmes & Converse, 311 Alexander Street, Buffalo, architects, for a five-story automobile service, repair and garage building, to cost \$100,000 with equipment.

Binghamton Brick Co., Binghamton, N. Y., is planning the early rebuilding of portion of plant destroyed by fire March 3, with loss reported in excess of \$175,000 with equipment.

J. M. & L. A. Osborn Co., 64-72 Rapin Place, Buffalo, iron and steel products, has filed plans for a one-story addition for storage and distributing service, to cost about \$21,000 with equipment.

Victor Plaster Co., Powers Building, Rochester, N. Y., A. H. Dewey, secretary and treasurer, is planning construction of a new mill at Victor, N. Y., for production of gypsum plaster, to cost in excess of \$75,000 with machinery. S. Firestone, 59 South Avenue, is engineer.

Buffalo, Niagara & Eastern Power Corporation, Buffalo, is arranging for a consolidation of all associated interests, including Niagara, Lockport & Ontario Power Co., Niagara Falls Power Co., and Tonawanda Power Co., Niagara Falls and Tonawanda, N. Y., to include general expansion in combined facilities, with extensions in transmission lines.

Union School District, Penn Yan, N. Y., is considering installation of manual training equipment in new junior high school to cost approximately \$250,000. John Johnson is president, in charge.

Indiana

INDIANAPOLIS, March 12.

BIDS are being asked by Board of Trustees, Water Works Department, Evansville, Ind., until March 29 for equipment for waterworks extensions and improvements, including steam engines, generators and switchboards, pumping machinery, boiler feed and sump pumps, coal and ash-handling machinery, boiler room equipment, valves and boxes, and traveling crane. Black & Veatch, Mutual Building, Kansas City, Mo., are consulting engineers.

Interstate Public Service Co., Indianapolis, is disposing of bond issue of \$12,554,000, a portion of fund to be used for extensions and improvements in power facilities and transmission lines, including acquisition of other properties. E. Van Arsdale is president.

Following recent acquisition of plant of Durant Motor Co. at Muncie, Ind., to Merchants' Trust & Savings Co., Muncie, property has been transferred to General Motors Corporation, Detroit, and will be used by Delco-Remy Corporation, Anderson, Ind., a division of purchasing company, for a new plant for manufacture of storage batteries. It is purposed to have factory ready for service in about 60 days. A. L. Hopkins, formerly chief engineer for Prest-O-Lite Co., Indianapolis, will be in charge of engineering at new unit; L. C. Goad, process engineer at Anderson plant, has been appointed superintendent at Muncie works.

Bantam Ball Bearing Co., Bantam, Conn., will proceed at once with superstructure for a one-story plant at South Bend, to cost about \$70,000 with equipment, for which general contract was recently let to H. G. Christman & Co., 306 South Notre Dame Street. Company will remove from Bantam to new location and provide for increased output.

Doeppers & Lennox, 226 East Michigan Street, Indianapolis, architects, have asked bids on general contract for a two-story automobile service, repair and garage building, 90 x 145 ft., to cost about \$90,000 with equipment.

Indiana General Service Co., Muncie, is arranging an expansion and improvement program to cost \$2,500,000, including extensions in power facilities, transmission lines and power substations. Plans are under way for construction of a double circuit steel tower transmission line from Fort Wayne to Marion, Ind., about 58 miles. At last-noted place a 20,000-kw. switching and power substation will be built, and a 25,000-kw. substation will be constructed at Muncie.

Company is operated under direction of American Gas & Electric Co., 30 Church Street, New York.

Major Brothers Packing Co., South Logan Street, Mishawaka, is said to be planning installation of ice and cold storage plant in three-story packing house to cost \$350,000, for which bids will be asked on general contract in April. Packers' Architectural & Engineering Co., 431 South Dearborn Street, Chicago, is architect and engineer.

Board of Education, Burlington, has authorized installation of manual training department in two-story addition to high school to cost \$75,000, for which plans have been drawn by C. E. Werking & Son, American Trust Building, Richmond, Ind., architects.

Mid-States Steel & Wire Co., Crawfordsville, formed recently by merger of Adrian Wire Fence Co., Adrian, Mich., Crawfordsville Wire & Nail Co., Crawfordsville, and Dwiggins Wire Fence Co., Anderson, will remove plant of Adrian company to Crawfordsville and consolidate with mill of Wire & Nail company. Facilities will be provided for production of field and poultry wire fencing, gates and ornamental fence, heretofore carried on at Adrian. Crawfordsville division will continue production of nails and kindred products, and Dwiggins plant will remain at Anderson without change in products.

Chicago

CHICAGO, March 12.

MACHINE tool sales the first two weeks in March were steady and at the rate of those in the latter part of February. Fresh inquiry gives promise that purchasing will be sustained over the next few weeks. Farm implement manufacturers are still the most active buyers. The International Harvester Co. has issued a list for its Moline plant and a tractor builder at Waterloo, Iowa, is in the market for a number of machine tools. Automobile accessory plants and a drop forge manufacturer are making purchases. The Stewart-Warner Speedometer Corporation, Chicago, has ordered 15 presses and other equipment. Willis Motors, Inc., Chicago, is preparing to issue a list including milling machines, lathes, boring mills and radial and multiple-spindle drills. Studebaker Corporation, South Bend, Ind., has purchased several tool-room items. Several inquiries emanate from Rockford, Ill., tool manufacturers who are improving their manufacturing facilities.

Two manufacturers of radial drills have advanced prices 10 per cent.

Plans are being considered by Blake Specialty Co., 360 North Michigan Avenue, Chicago, manufacturer of well augers, pipe bends, etc., for a new one-story foundry to cost about \$35,000 with equipment.

Firebrand Fuel Co., Norris City, Ill., is considering early rebuilding of portion of power house at local coal mining property destroyed by fire March 7, with loss of \$100,000, including boiler and engine equipment.

City Council, Cedar Falls, Iowa, is considering construction of municipal artificial gas plant, to cost about \$150,000 with equipment. A bond issue is being arranged.

Iowa Power & Light Co., Adel, Iowa, is disposing of bond issue of \$6,000,000, a portion of proceeds to be used for expansion and improvements, including transmission line construction. Company is affiliated with Illinois Power & Light Corporation, Chicago.

Walter H. Wheeler, Metropolitan Life Building, Minneapolis, Minn., engineer, has plans for a steam-operated electric power house at Polson, Mont., to cost more than \$50,000 with equipment.

Welfare Seating Co., 1119 Glenrock Avenue, Waukegan, Ill., W. J. Borgen, head manufacturer of car seats, etc., is planning for a new one-story factory to cost about \$35,000.

Produce Terminal Cold Storage Co., Chicago, care of Henschin & McLaren, 1637 Prairie Avenue, engineers, has awarded general contract to Wells Brothers Construction Co., 53 West Jackson Boulevard, for an eleven-story cold storage and refrigerating plant, to cost approximately \$2,000,000 with machinery.

Fire, March 2, destroyed a portion of the commissary department at car shops of Pullman Co., 110th Street, Chicago, with loss close to \$100,000 including equipment.

Iowa Railway & Light Co., Cedar Rapids, Iowa, has approved plans for a new steam-operated electric power plant at Webster City, to cost about \$40,000.

Solem Machine Co., 158 Morgan Street, Rockford, Ill., manufacturer of wood-working machinery and parts, has plans for a one-story addition, to cost in excess of \$100,000.

with equipment. Peterson & Johnson, Swedish-American Bank Building, are architects.

Corona Pen Co., 134 North La Salle Street, Chicago, will rebuild its plant at Antioch, Ill., recently partially destroyed by fire, with loss estimated at \$50,000 including equipment. Edgar M. Newman, 107 North Clark Street, Chicago, is architect.

City Council, Carlisle, Iowa, is asking bids until March 20 for pumping equipment, water tank and tower, with accessory apparatus, for a municipal waterworks. W. E. Buell & Co., Davidson Building, Sioux City, Iowa, are consulting engineers.

National Plate Glass Co., General Motors Building, Detroit, will soon begin erection of new unit at plant at Ottawa, Ill., to cost in excess of \$200,000 with equipment.

Shops of Rapid City, Black Hills & Western Railroad, Rapid City, S. D., were destroyed by fire March 5, with loss of \$200,000.

Milwaukee

MILWAUKEE, March 12.

DEMAND for machine-tools is improving, and while the volume of new business is still limited, production schedules are tending upward. The automotive industries are furnishing a more substantial market, although purchases as yet are hardly equal to the broad average of recent years at this season. On the other hand, manufacturers of agricultural power machinery, building and road construction equipment and general metal products shops are relatively good customers. Inquiry is generally active and continued betterment of demand is believed in sight.

American Metal Products Co., 1348 Burnham Street, Milwaukee, manufacturer of bronze castings, bearing metal, forgings, etc., has placed contracts for construction of a brick and steel foundry addition, 80 x 100 ft., to cost about \$40,000 complete. Inquiry is being made for equipment, including a 5-ton electric traveling crane. Improvements also are being made in forge shop and rolling mill.

Wisconsin Iron & Wire Works, 1660 Booth Street, Milwaukee, is erecting a one-story addition, 42 x 62 ft., designed by F. H. Hollister, consulting engineer, 428 Wisconsin Avenue. An investment of \$25,000 is planned.

Minneapolis, St. Paul & Sault Ste. Marie Railway contemplates installation of a new turntable at its terminal and division shops at Stevens Point, Wis., at a cost of \$35,000.

Reliable Mfg. Co., 417 Lake Avenue, Racine, Wis., manufacturer of hot plates, toasters and other electrical devices, has plans by A. L. Flegel, architect, Baker Building, for a new two-story shop, 40 x 120 ft., to cost about \$40,000 complete.

Bloom Cab Co., 410 Washington Street, Wausau, Wis., will build a two-story garage and service shop in two units, 60 x 65 ft. and 37 x 60 ft., starting work April 15. The architect is H. C. Manecke, care of Wausau Iron Works.

Kerner Automatic Hoist Co., Milwaukee, has been incorporated with 1050 common shares without par value, to take over operation of Milwaukee Hoist Co., 128-132 Ferry Street. Company manufactures hoists for building materials and expects to materially increase its output. Officers of new company also are officers and principal owners of Kerner Incinerator Co., Milwaukee, with Mackey Wells as president. Theodore and Herbert Zetterlund, principals in old company, are directors of new company and will be active in management.

Vincent-McCall Co., Kenosha, Wis., manufacturer of bed and cushion springs, is completing work on a \$35,000 factory addition, to be ready about April 1.

Miller Investment Co., Milwaukee, has engaged Martin Tullgren & Sons Co., architects, 9 Waverly Place, to design a three-story and basement garage, 100 x 150 ft., to be erected at a cost of \$200,000.

Bergstrom Paper Co., 225 West Wisconsin Avenue, Neenah, Wis., expects to start work May 1 on construction of a new power plant costing about \$75,000, consisting of a turbine room, 50 ft. sq., and a boiler house, 50 x 110 ft., requiring turbines of 2500 kw. capacity and three boilers. Engineers are Orbison & Orbison, 110 West College Avenue, Appleton, Wis.

Carl Bobke, 3030 Lisbon Avenue, Milwaukee, manufacturer of copper building supplies and other goods, is preparing to build a two-story shop addition, 35 x 78 ft., designed by A. J. Pietsch, 3515 State Street, local. Machinery requirements have not been decided upon as yet.

Jambor Tool & Stamping Co., 1261 Thirtieth Street, Milwaukee, has increased its capital stock from \$100,000 to \$200,000. Plant has been enlarged during past year and

further additions are contemplated. A. L. Kaems is president and general manager.

Wisconsin Fabricating Co., 401 Pearl Street, Green Bay, Wis., is establishing a new department for manufacture of tanks for gasoline and oil trucks.

Century Boat Co., Milwaukee, has been incorporated with \$100,000 capital to manufacture standard type of boat designed especially for outboard engines. Manufacturing plans call for an output of 500 to 1000 units this year. Principals are represented by law firm of Quarles, Spence & Quarles, 490 Broadway, Milwaukee.

Western Metal Specialty Co., Thirtieth Street and Calhoun Place, Milwaukee, manufacturer of automotive and industrial sheet metal products and freight car heaters, is building addition to its plant and purchasing new equipment.

Cincinnati

CINCINNATI, March 12.

MACHINE tool sales the past week have been of fairly good volume and indications are that bookings the remainder of the month will be maintained at about the present rate. Unless there should be a radical change in conditions in the next two weeks, machine tool builders estimate that the volume of business in the first quarter of 1928 will show an increase of from 15 to 20 per cent over that in the corresponding period last year. This, however, does not mean that the industry in general in the Cincinnati district has benefited to a marked extent, because the improvement has been confined to a relatively small number of companies.

That the automobile industry should be productive of a liberal amount of machine tool business in the next few months is the opinion of several manufacturers. At least one important machine tool company has quoted automobile makers in the Detroit district, on about \$300,000 worth of equipment, practically all of which will be purchased the first half of this year. A Detroit company has ordered eight large lathes from a local builder.

In the railroad field, buying has not opened up, although there are a considerable number of pending transactions. The Atlanta & West Point Railroad, Atlanta, Ga., has closed for a 48-in. 500-ton bevel-end wheel press and a No. 3 axle lathe, while the National Transit Pump & Machine Co., Oil City, Pa., has bought a 42-in. x 30-ft. heavy-duty engine lathe.

Bids will be received by Department of Water, Dayton, Ohio, W. W. Morehouse, director, until April 2, for five motor-driven centrifugal pumping units for sewage service, including complete lubricating system, cast iron pipe, fittings, etc. Metcalf & Eddy, Statler Building, Boston, are consulting engineers.

Board of County Commissioners, Springfield, Ohio, is taking bids until March 26 for equipment for a sand and gravel crushing plant, including crusher unit, power belt-ing, etc.

Guinn Mfg. Co., East Maple Street, Johnson City, Tenn., manufacturer of toys, novelties, etc., plans rebuilding portion of factory recently destroyed by fire, with loss close to \$50,000 including equipment.

Southern Refrigerating Co., Bristol, Tenn., will build a new ice-manufacturing and ice cream plant, 75 x 104 ft., at Kingsport, Tenn., to cost about \$75,000 with equipment.

Air Corps, Material Division, Wright Field, Dayton, Ohio, is asking bids until March 22, for one surface grinder, one radial drill, one thread comparator machine, one bench saw, one hack saw, one power saw and one nibbling machine, circular 264; until March 23, for 1000 high compression pistons, circular 265.

R. W. Flack, city manager, Springfield, Ohio, is considering installation of pumping plant on South Limestone Street for city sewage, to cost \$25,000. William Lucas is city engineer.

Stowers Lumber & Mfg. Co., Harriman, Tenn., will rebuild portion of hardwood mill recently destroyed by fire, with loss more than \$40,000. Company proposes to purchase a 300-kw. generator with accessories.

Gillette Grain Co., Nashville, Tenn., will soon begin work on a grain elevator, 200 ft. high, with storage annex, 110 ft. high, capacity 30,000 bu., to cost about \$100,000 with conveying, elevating and other equipment. Horner & Wyatt, Board of Trade Building, Kansas City, Mo., are engineers.

International Harvester Co., Chestnut and Water Streets, Columbus, Ohio, has awarded general contract to W. F. Hendrich, 2777 East Fifty-third Street, Cleveland, for a new factory branch, repair, service and sales building at Springfield, Ohio, to cost about \$100,000 with equipment. Headquarters are at 606 South Michigan Avenue, Chicago.

United States Engineer, Nashville, Tenn., will receive bids until March 22 for a quantity of annealed steel wire rope sheaves, etc., circular 321; until March 26 for one wire rope block, circular 322.

Tennessee Electric Power Co., Chattanooga, Tenn., will issue preferred stock in amount of \$1,250,000, considerable portion of fund to be used in connection with expansion and betterment program, including additional power facilities and transmission line construction.

Cleveland, Cincinnati, Chicago & St. Louis Railway Co., Cincinnati, is planning construction of locomotive and car repair shop units at Bellefontaine, Ohio, to cost in excess of \$120,000 with equipment.

C. H. Gosiger Machinery Co., 413-15 West Fifth Street, Dayton, Ohio, dealer in iron and wood-working machinery, is building a new office and warehouse at Bacon and McDonough Streets.

Pacific Coast

SAN FRANCISCO, March 7.

PLANS are being arranged by Western Oil & Refining Co., Inc., West Eighth Street, Los Angeles, for extensions and improvements in refinery at Wilmington, in harbor district, with installation of equipment to double capacity of lubricating oil division and asphalt refinery; machinery will also be installed in petroleum refinery. Company has arranged for a preferred stock issue of \$2,000,000, a portion of proceeds to be used for work.

Bids will be received by United States Indian Irrigation Service, Los Angeles, until March 28 for one 150-hp. boiler, and one 125-hp. boiler, with two superheaters.

Pacific Can Co., 290 Division Street, San Francisco, has superstructure in progress on one-story plant to cost about \$400,000, of which approximately \$300,000 will be used for machinery installation. H. L. Nishkian, Monadnock Building, is engineer and manager of construction.

Board of County Supervisors, Hall of Records, Los Angeles, is asking bids until March 26 for six water softeners for County farm. Plans at office of County architect, Hall of Records.

Arizona Edison Co., Yuma, Ariz., is arranging an extension and improvement program to cost about \$90,000 including transmission line construction.

Longview Fibre Co., Longview, Wash., is arranging for expansion, to include erection of two additional units and power house, to cost more than \$90,000.

Pacific Gas & Electric Co., 245 Market Street, San Francisco, has plans for one-story machine shop and repair works, with garage, to cost about \$125,000 with equipment.

San Joaquin Light & Power Corporation, Fresno, Cal., plans extensions and betterments in steam-operated electric power plant at Bakersfield, to cost \$45,000 with equipment. Improvements will also be made in similar plant at Midway, to cost approximately \$41,000 with machinery.

Southern Counties Gas Co., 810 South Flower Street, Los Angeles, has filed plans for a meter repair shop and mechanical works, with garage, 35 x 203 ft., to cost about \$40,000 with equipment.

General Electric Co., Portland, Ore., has leased a two-story building to be erected by David T. Honeyman, 703 Prospect Drive, for a new equipment storage and distributing plant; two cranes will be installed. Entire project will cost about \$80,000. Morris H. Whitehouse, Railway Exchange Building, is architect.

Los Angeles Pump & Supply Co., 500 East Eleventh Street, Los Angeles, will soon place general contract for a new one-story plant in Maywood section, to cost about \$27,000 with equipment.

Pan-American Western Petroleum Co., Los Angeles, E. L. Doheny, president, is arranging an expansion and improvement program to cost approximately \$10,000,000, to include additions to present plants and acquisitions of additional properties.

Kendall-Hazelett Battery Mfg. Co., 546 Skinner Building, Seattle, has plans for a new one-story plant for manufacture of electric storage batteries, to cost about \$30,000. Samuel W. Kendall is head.

Armijo Union High School District, Fairfield, Cal., has authorized plans for a one-story vocational shop at local high school to cost about \$25,000. Coffman Sahlberg & Stafford, Plaza Building, Sacramento, Cal., are architects.

Halcomb Steel Co., Syracuse, N. Y., has opened a warehouse at 1207 Santa Fe Avenue, Los Angeles, under direc-

tion of A. A. Westcott. Halcomb high speed and tool steels in rounds, squares and flats will be carried in stock.

Hillman & Cooney, Inc., 2439 Hunter Street, Los Angeles, has been appointed distributor of oil field products manufactured by Standard Machine Co., Torrance, Cal.

Canada

TORONTO, March 12.

SALES of machinery and tools are keeping pace with the general improvement in manufacturing business. Specifications on some fair-sized lists are out and others are in course of preparation. While the greater part of the new equipment has been purchased for the Ford plant at Ford City and other districts of Canada, and the Oshawa works of the General Motors Corporation, buying continues for items needed to fill some vacancies in equipment.

Railroads are purchasing tools for replacement, and some large lists are expected for the Point St. Charles plant of the Canadian National Railways and for the Weston shops at Winnipeg of the Canadian Pacific Railway, both of which are undergoing extensions. Demand from northern Ontario, Quebec and Manitoba mining fields is still strong.

Plans and specifications have been received from C. M. Croft, Canadian Trade commissioner at Auckland, New Zealand for equipment for New Zealand Government Railways and Public Works Department, Wellington. These are open for inspection at Commercial Intelligence Service, Department of Trade and Commerce, Ottawa. Tenders should be addressed to chairman, Railway Board, Wellington, New Zealand; the Secretary, Public Works Supplies and Tenders Committee, Wellington, New Zealand; and Secretary, Stores Division, General Post Office, Wellington. Items for New Zealand Government Railways include four ventilating and heating units; four battery shunting locomotives and charging sets; two boring mills for car and wagon tires; one face grinding machine; four plain milling machines; rack feed; 13 electric rivet heaters; two sand cutting machines; two screening and mixing machines for molding and core sands; two pattern makers' sanding machines; four automatic electric melting sets; four pipe and tube bending machines; one shearing machine; one vertical boring mill for wheel centres; four circular saw benches; three oil-fired spring furnaces; four universal spot welding machines; two heavy-duty suspension spot welding machines; one standard spot welding machine; one oil reclaiming plant; seven a.c. arc welding sets; two paint spraying machines, tenders close June 25.

Public Works Department list includes one turbine complete with governor; one generator complete; one complete bearing shell; one set of temperature indicating coils, tenders close May 29. Supply, delivery and erection of one-pipe line, approximately 2464 ft. long and an extension to bus-pipe about 59 ft. long, tenders close June 25.

A company in which I. W. Killam of Royal Securities Corporation, St. James Street, Montreal, is interested, contemplates establishing a pulp and paper plant in Nova Scotia, which will represent an expenditure of between \$10,000,000 and \$15,000,000. Sully Brass Foundries, Ltd., Toronto, has purchased a foundry building on Wabash Avenue.

Public Utilities Commission, London, Ont., proposes extensions and improvements to waterworks plant, including installation of a 4,000,000 gal. water pump to be operated by 500 kva. synchronous motor, for which bids will be called about April 1.

Grimsby Foundry Co., Ltd., 23-27 John Street, Grimsby, Ont., is having plans prepared for an addition.

Commercial Motor Bodies & Carriages, Ltd., Guelph, plans a three-story, 40 x 48 ft. addition to its plant.

Aerocrete Co. of Montreal, 759 Notre Dame Street West, Montreal, contemplates building factory at Hull, Que.

Willis & Co., Ltd., 580 St. Catherine Street West, Montreal, plans addition to factory at St. Therese, Que., for manufacture of pianos, musical instruments, etc.

Dominion Trap Rock Co., Bruce Mines, Ont., has started work on construction of quarry to cost approximately \$185,000. Equipment will be electrically operated.

Department of Public Utilities, Port Arthur, Ont., is arranging for construction of an addition to power plant to cost \$40,000.

Plant of Black Donald Graphite Mine, Calabogie, Ont., including refining mill and other buildings, was destroyed by fire with loss of \$150,000. Reconstruction will start immediately.

